

# HYPNAGOGIA

The Nature and Function of the Hypnagogic State

by

Andreas Mavromatis

Thesis submitted to the Department of Psychology,  
Brunel University, for the degree of Doctor of Philosophy

January 1983

VOL I



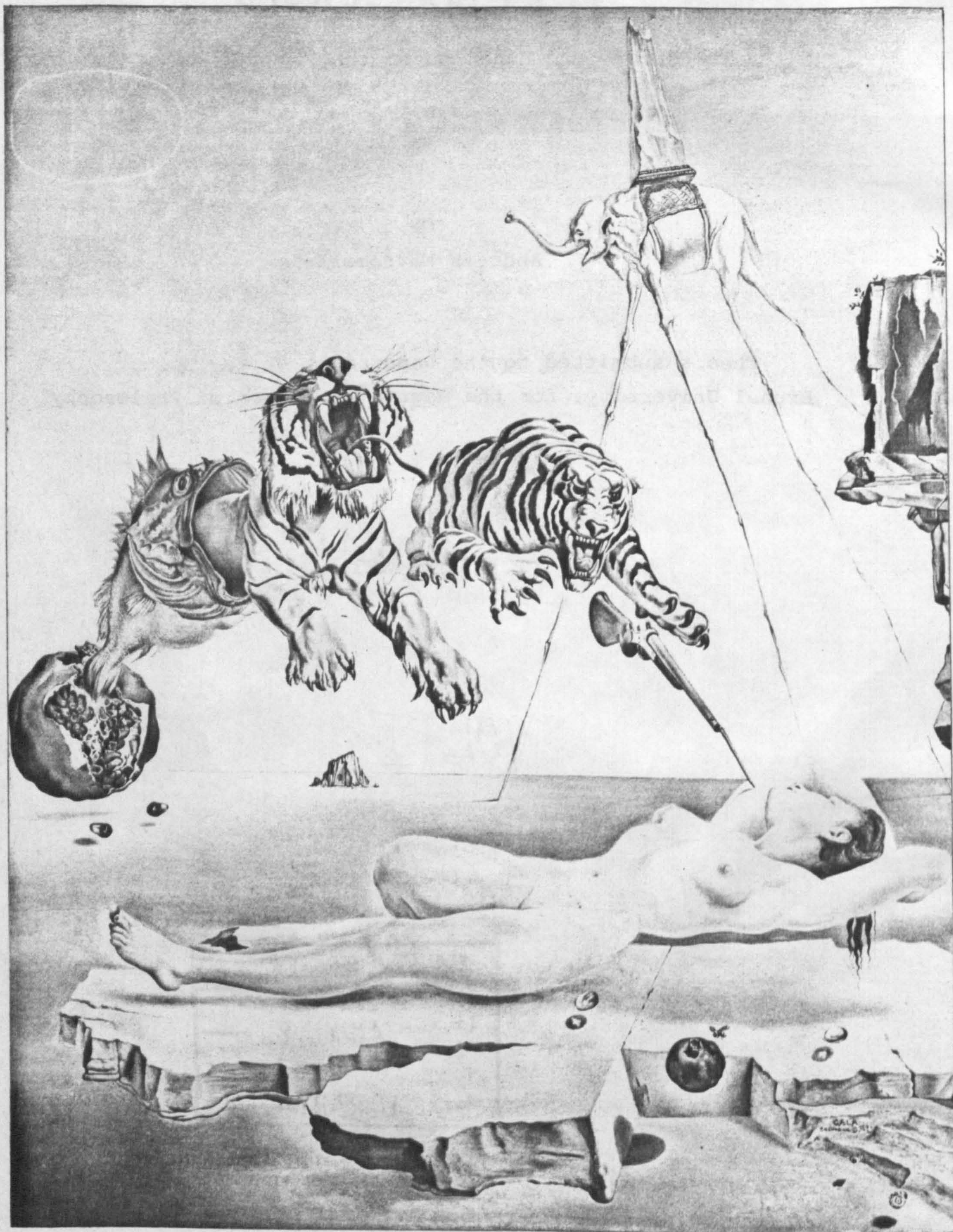
Thesis  
Ph.D.  
M393

BU no D46265/83



Dream caused by the flight of a bee  
around a pomegranate one second  
before waking up 1944  
Oil on canvas, 51 x 41  
Thyssen-Bornemisza Collection, Lugano

Salvador Dalí





## CONTENTS

Abstract	3
Acknowledgements	5
Preface	6

### - PART ONE -

#### PHENOMENOLOGY

1. Introduction	8
2. Historical background and incidence	12
3. Methods and procedures of investigation	19
4. Sensori-motor phenomena and systems of classification	25
5. Physiological correlates	64
6. Problems of definition and the stages of the hypnagogic state	73
7. Cognitive-affective characteristics	83
Summary and Conclusions of Part One	131

### - PART TWO -

#### HYPNAGOGIA AND ITS RELATIONSHIP TO OTHER STATES, PROCESSES, AND EXPERIENCES

Introduction	137
8. Hypnosis	139
9. Dreams	150
10. Meditation	183
11. Psi	212
12. Schizophrenia	265
13. Creativity	310
14. Other areas of experience	374
Summary and Conclusions of Part Two	388

### - PART THREE -

#### BRAIN MECHANISMS AND FUNCTION OF HYPNAGOGIA

Introduction	394
15. Cerebral correlates of hypnagogic visions	395
16. Cerebral correlates of hypnagogic mentation	420
17. The old versus the new brain	434
18. The loosening of ego boundaries	460
19. The function of hypnagogia	474
20. The significance of hypnagogia	492
Appendix	510
Bibliography	519

ANDREAS MAVROMATIS

Ph.D.

Psychology, Brunel University, 1983.

— HYPNAGOGIA —

The Nature and Function of the Hypnagogic State

---

ABSTRACT

An analysis of the hypnagogic state (hypnagogia) leads to the conclusion that, far from being a simple phase of sleep, this state or process is a central phenomenon characterized by a constellation of psychological features which emerge as a function of the hypnagogic subject's loosening of ego boundaries (LEB) and are correlated with activities of subcortical structures. This analysis both facilitates the relating of hypnagogia to other states/processes of the human organism, such as hypnosis, meditation, dreams, psi, schizophrenia, and creativity, and helps shed light on their nature. Further, hypnagogia is viewed as a circadian phenomenon related to the basic rest-activity cycle wherein it represents the cycle's dream component. As such it encompasses a variety of types of dream, the nocturnal or REM kind being only one of them. It, thus, constitutes the exemplification of a basic and pervading phenomenon herein termed Oneirosis, i.e. the need and readiness to have dreams and dreamlike experiences, such as hallucinations and quasi-hallucinations, throughout the 24 hour cycle independently of sleep and wakefulness. It is further proposed, on neurophysiological, developmental and psychological grounds, that this phenomenon is evolutionally older than sleep and wakefulness, that it has a hypometabolic and anxiety-reducing function, and that, by dint of its character of LEB, it enables the individual to slacken his ego strictness and become more tolerant as well as providing him with opportunities for more holistic experiences and continually renewed psychological orientations. Moreover, due to its unique character of riding between wakefulness and sleep, hypnagogia points to new evolutionary possibilities, namely, to the establishment of a new psychological state serving collectively the functions of wakefulness, sleep, and dreaming.



To my mother  
for her love and patience

Στήν μάνα μου  
γιά τήν αγάπη της καί τήν ύπομονή της



## Acknowledgements

Thanks are due to a number of people and establishments without whose generous assistance this work would never have reached its present form. First, I would like to extend my thanks to the Social Science Research Council for awarding me the grant (No. 79/20805/PSY) that enabled me to carry out this research at all, and to Brunel University for offering me a post-graduate place and for being instrumental in my receiving the S.S.R.C. grant. I would also like to thank the staff of Brunel University Inter-Library Loans section for their helpfulness, and in particular Ms. Lorna Barnes for her tireless efforts in tracing and obtaining material from obscure and remote sources in this country and abroad. Thanks are also due to a number of colleagues and staff of the University's Psychology Department for consultations and personal support. Special thanks are due to Dr. John Richardson for his constant supervision, advice and encouragement throughout this research, and for so patiently deciphering my scribbly handwriting.

I am deeply grateful to the following for spending generously so much of their time and energy in translating for me hundreds of pages of very important material not available publicly in English: Adie Fishman, Heather Cox, Anne Vasseur, Annabelle Theodore, Liz Neville, Richard Pelling, Janice Selkirk, Jane Conway, Nigel Cooper, Ursula Riniker, Gabriele Simons. I wish also to thank Harry Fox for his incalculable contribution in helping me collect a great deal of the material in this thesis. Finally, in dedicating this work to my mother I hope to express my gratitude for her unstinting support, enormous patience, and constant supply of coffee.



## Preface

This research has been one of theoretical exploration rather than hypothesis testing. As I read the literature in the area I was struck by four important observations: First, no systematic analysis of the subject's cognitive-experiential state had been undertaken. Second, research in this area, which was until very recently mainly ignored outside France and Germany, was rather fragmented and carried out on the whole without any serious attempt to place it in a comprehensive conceptual framework. Third, although the hypnagogic state appeared to be related to a number of other states, processes, and experiences, on phenomenological and possibly aetiological grounds, no systematic studies along these lines had been reported. Fourth, there was no systematic attempt to understand the function of the hypnagogic state in a wider, evolutionary setting.

In my efforts to remedy the above, I carried out an exhaustive research of the literature - not all of which was easily accessible - bringing together varied material from disparate sources and organizing it in what I believe to be a comprehensive and, I hope, comprehensible conceptual framework.



- PART ONE -

PHENOMENOLOGY



## CHAPTER 1

### INTRODUCTION:

Hypnagogic experiences are generally referred to as hallucinatory or quasi-hallucinatory events taking place on falling asleep. The term "hypnagogic" (from the Greek hypnos = sleep, and agogos = conductor, leader) was introduced into the literature by Maury (1848). Other terms proposed include Mitchell's (1890) "praedormitium", Weygandt's "presomnal or anthypnic sensations" (Vihvelin 1948), Trömner's (1911) "hypnagogic phantasms", Arnold-Forster's (1921) "borderland state" experiences, Leroy's (1933) "visions of half-sleep", Archer's (1935) "oneiragogic" images, Critchley's (1955) "sleepening" state experiences, and "phantasmata" and "faces in the dark" (in: Leaning, 1925, p.289). Similar phenomena occurring at the other end of sleep have been called "hypnopompic" (Myers, 1903), that is, coming or leading out of sleep. The pre-sleep period as a state or process has been variously designated as "the hypnagogic state", "falling asleep", "sleep onset", "Einschlafen", "endormissement", "addormentamento". Unfortunately, there is no single word in English equivalent to the Italian "dormiveglia" (sleep-waking) which so succinctly describes both the "hypnagogic" and the "hypnopompic" states.

In general, there is a tendency among investigators in this area to employ the term "hypnagogic" to refer to experiences occurring both at sleep onset and at the awakening side of sleep. Since there have not as yet been proposed strong phenomenological and physiological criteria for their distinction I shall continue in the same tradition and consider them as belonging to the same group of phenomena. I shall, furthermore, introduce the collective term "hypnagogia" to stand for the hypnagogic-hypnopompic state and all the phenomena and experiences encountered in



it. However, the use of the two separate terms will be maintained for the purpose of indicating the temporal occurrence of such experiences.

The paper falls into three parts dealing respectively with the nature of hypnagogia, its relationship to other states and phenomena, and its function and evolutionary significance. More specifically, in the first part I examine the phenomenology of the state which I divide into somato-sensory or perceptual and quasi-perceptual (visual, auditory, olfactory, etc.) and psychological phenomena (quality of thought, mental attitude, etc.). I examine briefly the physiological correlates of the state as well as the methods used for studying hypnagogia and offer some criticism. In classifying the phenomena I make use of existing classificatory systems and suggest the employment of new ones.

Defining the hypnagogic state has been a difficult task. This was partly due to the transitional character of the state and the occurrence in it of cognitive modes and phenomena which are generally thought to be severally descriptive of - indeed, to characterize - other states of consciousness. Moreover, at the very introduction of the term 'hypnagogic', Maury (1848), the man who coined it, clearly noted that the occurrence of these phenomena - in particular, the visual kind - at sleep onset were not necessarily hypnagogic, i.e. they were not necessarily sleep inducing! Thus, at the beginning of this paper, a working definition of the hypnagogic state is offered which, however, is augmented as data about the state are presented and analysed.

Concerning the psychological features of the state, not all of these are extensively examined in the first part of the paper. It seemed more appropriate to discuss some of them in greater detail in the second part in the process of comparing hypnagogia to other states and experiences. In the first part, an analysis of hypnagogia is, also, begun and continued throughout the paper.

In the second part, an examination of the



phenomenological relationships of hypnagogia with a number of other states and phenomena is carried out. Not all states and processes related to hypnagogia are examined to the same depth, particular attention being paid to hypnosis, dreams, schizophrenia, meditation, psi, and creativity. One of the striking findings in this part is the fact that some of these experiences are only distinguishable from hypnagogia by the subject's set of beliefs and the setting in which the experiences take place. Practically all of them contain a measure of hypnagogia, that is, they either begin or develop into such phenomena. Thus, hypnagogia is seen to be conducive to the production of these experiences and, vice versa, some of them develop into a hypnagogic state.

In the third part, I attempt three tasks. First, I try to show that the 'strange' phenomenology of hypnagogia and related states is correlated with activities of sub-cortical structures. One important implication of this is that the (qualified) label of 'regressivity' applied to it by many workers is justifiably employed. Second, I argue that the core psychological phenomenon out of which springs the whole gamut of hypnagogic experiences is the loosening of the ego boundaries of the subject. This phenomenon which is ontogenetically old and developmentally 'regressive', in that its tendency is to blur boundaries and fuse or multi-sociate concepts, entities, etc., strengthens, and it is strengthened by, arguments supporting the involvement of sub-cortical structures. Third, I propose that hypnagogia constitutes the dream component of life's triptych - dreaming, sleep, wakefulness - and that one of its functions, as a circadian phenomenon, is to reduce tension and anxiety. It might also constitute the substratum of continuous but not always conscious mental activities taking place throughout life. As such, it opens great vistas of psychological exploration. Its introspective study may furnish the individual not only with the benefits of an integrated personality but also



with the means of discovering new or little known modes of experience which will undoubtedly enrich him as a psychological entity.

Significantly, in carrying out such introspections one also becomes inevitably faced with ontological and epistemological questions whose discussion falls outside the scope of this paper but whose mere raising in the mind of the reader will have gone a long way to justifying the writing of this paper.



## CHAPTER 2

### HISTORICAL BACKGROUND AND INCIDENCE:

Reference to hypnagogic experiences goes as far back as Aristotle (1931, 462a, 5-10) who remarked that anyone can convince himself of their occurrence "if he attends to and tries to remember the affections we experience when sinking into slumber", and that, in respect to the hypnopompic variety, a person can, "in the moment of awakening, surprise the images which present themselves to him in sleep". In the 3rd century A.D., Iamblichus "the divine" (1895, pp.115-117) writing on "god-sent" (θεόπεμπτοι) experiences and the conditions under which they take place, referred to "a condition between sleeping and waking" and "when sleep is leaving us, and we are beginning to awake" during which time and conditions "voices are heard by us" and "sometimes a bright and tranquil light shines forth". Leaning (1925, p.291) cites a number of writers in the 16th century who gave descriptions of their hypnagogic experiences. In the 17th century Hobbes (1651) referred to his hypnagogic visions of "images of lines and angles" as a "kind of fancy" he could give "no particular name" to. Both Leaning (1925, p.291) and Ellis (1911, p.30) made reference to the descriptions of hypnagogic imagery recorded in 1600 by the astrologer Simon Forman in his autobiography. In the 18th century Emanuel Swedenborg reported his hypnagogic experiences, along with a method of inducing them, in numerous publications (e.g. 1928, 1977; see also van Dusen 1972, 1975). On one occasion Swedenborg (1928, para. 7387) wrote: "... there is still another kind of vision which comes in a state midway between sleep and wakefulness. The man then supposes that he is fully awake, as it were, inasmuch as all his senses are active".

In the 19th century reference to them was made by, among others, Gruithuisen (1812), Ferriar (1813), Goethe (cited by Galton 1883, p.115), McNish (1830), Marc (cited by Baillarger 1846), Poe (1949), Herschel (1868), Hervé de



St. Denis (1867), Mitchell (1890), Stead (1891: cited by Leaning 1925), Weed and Hallam (1895). Poe spoke of them as a class of fancies, of exquisite delicacy, which are thoughts: they seem to me rather psychal than intellectual. They arise in the soul... only at its epochs of most intense tranquility - and at those mere points in time where the confines of the waking world blend with those of the world of dreams. I am aware of these 'fancies' only when I am on the very brink of sleep, with the consciousness that I am so.

Poe (1949, p.543)

On the other hand, Mitchell (1890) noted that "the borderland of sleep is haunted by hallucinations... voices... distressingly real visions seen during the prae-dormitium and at no other period".

Serious research into these phenomena began with Müller (1826, 1848), Baillarger (1846), and Maury (1848, 1853, 1857, 1878). There followed a number of other late 19th and early 20th century workers notably Taine (1857, 1883), de Boismont (1859), Galton (1881, 1883), Gurney, Myers, and Podmore (1886), James (1890), Mitchell (1890), Ladd (1892), Greenwood (1894), de Manacéine (1897), Ellis (1897, 1911), Gellé (1903), Myers (1903), Wundt (1904), Alexander (1909), Silberer (1965), Titchener (1909), Trömmner (1911), Woolley (1914). With the advent of behaviourism interest in this area waned and the following years saw relatively few publications, e.g. Delage (1920), Walsh (1920), Warcollier (1921), Arnold-Forster (1921), Leaning (1925), Leroy (1933), Archer (1935), Jéquier (1940), Lhermitte and Sigwald (1941), Tournay (1941), Kubie (1943), Kubie and Margolin (1942), Rouquès (1946), Vihvelin (1948). In more recent years, with "the return of the ostracised" imagery in general (Holt, 1964), interest re-emerged, e.g. McKellar and Simpson (1954), Ardis and McKellar (1956), McKellar (1957, 1959, 1963, 1968, 1975, 1977, 1979a, 1979b), Critchley (1955), Oswald (1962), Owens (1963), Bertini, Lewis and Witkin (1964), Dement (1965), Foulkes and Vogel (1965), Craik (1966), Liberson and Liberson (1966), Foulkes, Spear and Symonds (1966), Singer (1966), Vogel, Foulkes and Trosman (1966), Fischgold and Safar (1968), Stoyva and Kamiya (1968),



Budzynski and Stoyva (1969), Gastaut (1968, 1969), Budzynski (1972, 1977), Ey (1973), Stoyva (1973), Honorton and Harper (1974), Braud and Braud (1975), Oliver (1976), Williams and Abernethy (1978), Richardson, Mavromatis, Mindel, and Owens (1981).

An early survey by Müller (1848) reported an occurrence of hypnagogic imagery of only 2% in adults: similar results were also obtained by Galton. In her comprehensive survey Leaning (1925) found that the imagery occurs in about one third of the adult population and to a much greater extent in children. McKellar and Simpson's (1954) more recent calculations are in agreement with Leaning's findings. Lately, Owens (1963), Buck and Geers (1967), McKellar (1972), and Richardson et al (1981) reported an incidence of 77%, 72%, 76%, and 75% respectively. The real percentage may be even higher if we bear in mind "false negatives" that "seem to occur by a process of ignoring what one is not alerted to notice, as well as from emotional blockage" (McKellar, 1972, p.43). According to McKellar people who never thought they had hypnagogic experiences come to realize that they have them frequently once they have been alerted to them (see also Leroy 1933, pp.xiii-xiv). Galton (1883), McKellar (1957), Oswald (1962), and Holt (1964) also drew attention to cultural and social factors that prevent individuals from admitting that they have such experiences. For instance, many people might deny having hypnagogic experiences "because they have a fear of being trapped into admitting some psychopathological oddity" (Oswald, 1962, p.97).

Certain older reports (e.g. De Manacéine 1897, Partridge 1898) that appear to argue in favour of a higher incidence of hypnagogic imagery among children, have recently been challenged by the results of longitudinal studies of dreams in children carried out by Foulkes (1971). The de Manacéine study showed an incidence of 80% in 6-year-old children and 40% in 8-15-year olds. The Partridge survey on 826 children yielded the following incidences: 58.5% in 13-16-year-olds, 59.4% in 12-year-olds, 62.2% in 11-year-olds, 65.0% in 10-year-olds, 62.6%



in 9-year-olds, 60.0% in 7-8-year-olds, and 64.2% in 6-year-olds. Foulkes, on the other hand, found that 61% of the interruptions of 9-10-year-olds yielded hypnagogic phenomena whereas with the interruptions of 3-4-year-olds the presence of hypnagogic imagery was only 18%.

However, both the earlier studies and the Foulkes' investigation suffer from a methodological difficulty, namely, the reliability of very young children to understand the instructions and/or have the capability to distinguish between hypnagogic and adjacent states and give accurate reports. In addition, the methods employed by these investigators differed widely from each other: Partridge used the survey method, and, while Foulkes woke children from a clearly hypnagogic state, de Manacéine collected her data from hypnopompic awakenings only. Nonetheless, the Partridge study is the first to point out ebbs and flows in the occurrence of hypnagogic imagery: in the case of children there were found two peak periods, one around the age of ten and the other stretching below the age of six. Other researches (e.g. Leaning 1925, Oswald 1962) have also observed that hypnagogic experiences tend to occur in runs, appearing en masse for days or weeks to disappear and re-appear later again. Leaning also noted that some people have hypnagogic experiences sporadically from early childhood whereas with others the experiences make their appearance for the first time in later life.

Although earlier studies showed no statistically significant difference in incidence of hypnagogic imagery with regard to sex, more recent research by Owens (1963), McKellar (1975), and Richardson et al (1981) has shown that these experiences are more common in females. The Richardson et al survey carried out on 600 normal subjects between the ages of 20 and 80, has also shown a higher incidence among lower class subjects and significantly lower incidence among subjects in their 60s and 70s.

The evidence with regard to possible correlations between hypnagogic experiences and physical and/or mental



health is, at first sight conflicting. For instance, Burdach (1839) and Herschel (1866) emphatically pointed out that hypnagogic experiences occur when one is in good health and his mind is calm. On the other hand, Baillarger (1846), Maury (1848, 1878), Hyslop (1908), Walsh (1920), Leaning (1925), Walter (1960), and Oswald (1962) cite numerous cases of people whose hypnagogic experiences appeared for the first (and, sometimes, only) time or became intensified, during poor health, severe general fatigue, fever, indigestion, nervous disturbance, or shock. Some writers argue that these phenomena are more liable to occur in nervous (Oswald 1962), impressionable (Walsh 1920), sensitive and thoughtful subjects "of a reflective and perhaps anxious temperament" (Critchley 1955). McDougall considered hypnagogic experiences to be hallucinations occurring to sane and healthy people under "more or less abnormal conditions" (cited by Leaning 1925, p.289). By contrast, de Manacéine (1897, p.239) noted that "for these phenomena to attract attention a certain power of observation is required" from which she inferred that "that is why they are chiefly found in intelligent persons". The soundness of this remark, however, has recently been disconfirmed by the results of the Richardson et al study which showed no association of hypnagogic imagery with either verbal or nonverbal intelligence.

Nevertheless, both Leaning's (1925) and McKellar's (1957, 1959, 1975) investigations show that hypnagogic experiences are not statistically related to physical or mental ill-health. Moreover, other studies (e.g. Foulkes and Vogel 1965; Foulkes et al 1966; Vogel et al 1966; Budzynski 1972, 1977; van Dusen 1972) argue that the occurrence of hypnagogic imagery not only is not suggestive of ill-health but that, on the contrary, it is indicative of a balanced personality (see also chapt. 13, 19, 20).

Indeed, the fact that hypnagogic experiences tend to increase (or even appear for the first and only time) during ill health in some people, although they might decrease in others (Leaning 1925, p.301), might be due to



one or both of the following two factors: (a) the increase might be illusory, i.e. these people only noticed their hypnagogic experiences when they were forced, owing to their ill health, to attend to their own internal states more than they would do when in good health; it is also probable, as Galton (1883, p.123) suggests with reference to the appearance of faces, that although these might always be present, "the process of making the faces is so rapid in health that it is difficult to analyse it without the recollection of what took place more slowly when we were weakened by illness" ; (b) there might be common factors (relaxation, turning inwards, etc.) attending both a case of fatigue or fever and a case of normal hypnagogia.

Some observers (e.g. Taine 1883; Titchener 1909; Hollingworth 1911) noted that the imagery of their hypnagogic experiences appeared in a sense modality other than the one that predominated during their fully waking life. Leaning (1925) also reported cases to the same effect. However, this hypothesis which would argue that, for instance, poor visualizers should have more visual hypnagogic imagery than good visualizers has not been statistically confirmed. On the other hand, Leaning (1925, p.376) found that of the 40% of her mainly visual hypnagogist correspondents who provided her with information regarding their visualizing ability nearly twice as many were considered good visualizers as compared to those who considered themselves bad visualizers. However, by themselves these results do not constitute a strong argument in favour of the proposition that visualizing ability contributes to, or correlates with, the occurrence of hypnagogic visions, mainly because: (a) the investigator analysed her results ad hoc, (b) only 40% of her subjects provided the information under discussion, (c) there is no way of telling why these subjects provided this kind of information since they were not specifically asked to do so, i.e. there may be confounding motivational reasons especially because of the 'psychic' connotations of the survey, and (d) no standardized criteria were employed to define 'good' and 'bad' visualizers.



In respect to the relationship between waking imagery and hypnagogic imagery in general, Holt (1972) found a positive but insignificant correlation between the two. As Holt (1972) himself, Starker (1974), and Schacter (1976) have pointed out, however, in future experiments a distinction needs to be drawn between volitional waking imagery and the more passive day-dreaming type. This requirement acquires specific importance in the succeeding chapters of this paper both in defining the character of hypnagogia, one feature of which is passivity-receptivity, and in relating it to other states and experiences that share this particular dimension.

Indeed, in view of evidence that hypnagogic imagery can be experienced with open eyes (e.g. Müller: referred to by Leroy 1933; Hervé de St. Denis 1867; Alexander 1909; Leaning 1925; Leroy 1933; Rawcliffe 1952; McKellar and Simpson 1954; McKellar 1972; Myers 1957), that it does not necessarily lead to sleep (e.g. McNish 1830; Maury 1848; Alexander 1909; Rouquès 1946; Collard 1953; McKellar and Simpson 1954; Myers 1957; Green, Green and Walters 1970), and that it can, to varying degrees of success, be controlled, or even deliberately formed (e.g. Hervé de St. Denis 1867; Maury 1878; Binet 1894; Delage 1903; Janet: in Delage 1903; Woolley 1914; Warren 1921; Leroy 1933), the passive-receptive aspect of hypnagogia acquires paramount importance both as a feature distinguishing this state from full wakefulness and as a means of inducing and controlling it (see chapter 7).



## CHAPTER 3

### METHODS AND PROCEDURES OF INVESTIGATION:

Historically the methods employed for collecting data in the hypnagogic area are as follows:

(1) Spontaneous self-observation and questionnaire - survey (e.g. Müller 1848; Poe 1949; Ellis 1897; Alexander 1909; Hollingworth 1911; Arnold-Forster 1921; Varendonck 1921; Warren 1921; Slight 1924; Leaning 1925; Archer 1935; Hanawalt 1954; Buck and Geers 1967; Hebb 1968; McKellar 1972; Richardson et al 1981).

(2) Systematic self-observation (e.g. Maury 1848; Müller 1848; Ladd 1892; Silberer 1965; Hicks 1924; Leroy 1933; Froeschels 1946, 1949; Vihvelin 1948; Collard 1953; Rapaport 1967a, 1967b; Singer 1976; Sartre 1978).

(3) Experimental studies (e.g. de Manacéine 1897; Bertini et al 1964; Green and Green 1978; Green et al 1970, 1971a, 1971b, 1973; Foulkes and Vogel 1965; Dement 1965; Foulkes et al 1966; Vogel et al 1966; Liberson and Liberson 1966; Vogel et al 1972; Budzynski 1972, 1977; Stoyva 1973; Schacter and Kelly 1975; Oliver 1976).

The first group comprises observations made on oneself spontaneously by two categories of people: The first category is made up of authors who, having noted the experiences in themselves, set about publishing their findings (e.g. Poe 1949; Hollingworth 1911; Slight 1924). The second category includes those people that answered questionnaires regarding their hypnagogic experiences (see e.g. Müller 1848; Galton 1883; Taine 1883; Leaning 1925; Buck and Geers 1967; McKellar 1957, 1972; Richardson et al 1981). The strength of this method lies in its spontaneity and purity of data. However, there are at least three major disadvantages with this approach. First, hypnagogic experiences are often not recorded immediately after they have taken place thus permitting possible elaborations. Second, reported experiences are likely to be those most striking thus not permitting, for instance, finer analysis of modality incidence. Third, in the case



of questionnaire-surveys people may be unwilling to admit to having these experiences for fear that to do so might indicate some pathology (Galton 1883, McKellar 1957, Oswald 1962, Holt 1964).

The second method involves: (a) the systematic recording of hypnagogic experiences occurring spontaneously (i) to oneself, and (ii) to subjects who have been instructed to make such recordings over a period of time, and (b) the systematic observation of hypnagogic experiences wherein the subject (as in (i) and (ii) above) set deliberate watch for the recording of such experiences. Of these two approaches, the former clearly retains the spontaneity and purity of these events whereas the latter may suffer from some contamination due to deliberation.

The experimental method clearly has the advantage of controlling numerous physiological, psychological, and constitutional variables. In affording the opportunity to observe physiological and EEG correlations, for instance, it may lead to a more rigorous definition of hypnagogia through the specification of converging operations which combine verbal reports with objective, physiological indicators (Stoyva 1973). Drawbacks of this method may lie (a) in the appropriateness or otherwise of hypnagogic interruptions which (i) may lead to the destruction of this delicate state, (ii) require refined distinctions between states of consciousness at first interruptions during e.g. alpha REMs, SEMs, theta waves, etc., at subsequent interruptions with similar physiological and electroencephalographic parameters, at subsequent interruptions after any of the above parameters, e.g. after an alpha REM period that occurred after a specific interruption (see Schacter 1976, de Strooper and Broughton 1969, Fiss, Klein, and Bokert 1966, Lavie 1974, Lavie and Giora 1973), (b) in the ultimate strength and utility of converging operations, i.e. the justification for generalizing from observed correlations since personality and constitutional variables may argue against such an enterprise (Foulkes et al 1966, Liberson and Liberson 1966), and (c) in the possible qualitative differences between



spontaneously occurring hypnagogic phenomena and those taking place in a sleep laboratory either 'freely' or deliberately induced (e.g. biofeedback).

Induction of hypnagogia under controlled experimental conditions has been carried out by, among others, Kubie (1943), Kubie and Margolin (1944a), Bertini et al (1964), Tart (1969), Honorton and Harper (1974), Braud and Braud (1975). Kubie and Margolin (1944a) devised an apparatus that fed back to the subject, via an amplifier and headphones, his own respiratory rhythm thus inducing a hypnagogic state through the employment of rhythm and monotony. Kubie (1943) used this method mainly for psychotherapeutic purposes (see also Slight 1924, and Cade and Coxhead 1979). Bertini et al (1964) used a mild sensory deprivation technique wherein they covered their subjects' eyes with halved ping-pong balls thus creating a ganzfeld and had them speak continuously against a background of white noise. Some of their subjects' experiences were images and feelings from childhood (see also Kubie 1943). Perhaps suggestive of the existence of diurnal cycles of 'receptivity' was Bertini et al's observation that although hypnagogic experiences were obtained at other parts of the day, the most pronounced ones were at normal bedtime. Gastaut (1969) deprived his subjects of sleep and then had them read a book until they fell asleep. Tart suggests that the subject should lie in bed, as in going to sleep, but keep his arm in a vertical position resting on the elbow; this would allow him to move into a hypnagogic state but prevent him from going to sleep because the decreased tonus in the muscles of the arm would cause the latter to fall and thus awaken him.

To the above must be added a number of biofeedback studies in which the subjects are trained to attain and maintain a hypnagogic state by monitoring their own physiological arousal (e.g. Syoyva and Kamiya 1968; Budzynski 1969, 1972, 1977; Budzynski and Stoyva 1969; Brown 1970; Green, Green and Walters 1970; Stoyva 1973; Oliver 1976; Green and Green 1978; Cade and Coxhead 1979). One attractive feature for the subjects in hypnagogic biofeedback, as Stoyva (1973, p.398) points out, is that it offers a



means of putting themselves into a condition in which they experience imagery of hallucinatory intensity. Stoyva and his collaborators have been concentrating on the induction of relaxation monitored by an apparatus called the "biofeedback polygraph" developed by Budzynski (see Budzynski and Stoyva 1969, Budzynski 1972, Budzynski 1977). The instrument records EEG (mainly alpha and theta ), EMG from the frontalis muscles, and six other physiological parameters. Stoyva's emphasis on feedback relaxation for hypnagogic research was inspired by the work of Jacobson (1938, 1970) on progressive relaxation, and by the clinical usefulness of autogenic training. The phenomena observed in such studies are identical to those reported in the spontaneously occurring hypnagogia. For instance, Stoyva reports:

The condition of feedback-induced muscle relaxation is associated with an alteration in the quality of thinking, and involves a departure from the thought processes of alert, reality-oriented wakefulness to the imagery and sensations characteristic of the twilight states bordering on sleep. In deep relaxation, sensations of heaviness and warmth are common - probably related to a shift toward parasympathetic dominance in the autonomic nervous system. Distortions or changes in body image are likewise common - feelings of floating, of turning , of a limb moving, or disappearing, vivid visual images, often of a hallucinatory intensity, frequently appear. These images occur spontaneously, and seem related to 'nonstriving mode of experiencing' in which the subject finds himself.

(Stoyva 1973, p.394)

In Oliver's feedback-induced hypnagogia the subject "would go to a state of consciousness very near asleep, and then rouse slightly into the state of seeing hallucinated images" (Oliver 1976, p.117). Clearly, the main difficulty in this area of research has been that of maintaining consciousness in a state of low arousal. Nonetheless, hypnagogia induced by biofeedback has found a number of applications, including clinical treatment (e.g. Budzynski 1977), the encouragement of creativity (e.g. Green et al 1970), and sleep learning (e.g. Budzynski 1972)

Two other methods of inducing hypnagogia are auto-suggestion (e.g. Woolley 1914) and deliberate increase of



carbon dioxide in the blood by means of shallow breathing (e.g. Kelly 1962; Swedenborg 1928, 1977). Both of these methods yielded hypnagogic phenomena incidentally, that is, although neither of them were employed expressly for the induction of hypnagogia they, nonetheless, led into it. Woolley's correspondent, for instance, experienced hypnagogic imagery when he resorted to self-hypnosis for the purpose of helping himself out of a nervous breakdown. Swedenborg's hypnagogia was closely connected with meditation. Kelly's instructions related to the production of a normalized pre-sleep state as a therapeutic procedure against insomnia.

There are two main procedures of recording the occurrence of hypnagogic phenomena: (a) after the experiences have taken place and, (b) during the experiences. The first procedure is the most commonly employed and encompasses all three major methods of investigation outlined in this chapter. The second has been employed mainly by McKellar (1979b) who trained subjects to report their experiences as they occurred - and had them tape-recorded in the process (I have also used this procedure in my own studies: for more details see chapter 7 and Appendix). Although some biofeedback material (e.g. Oliver 1976) appears to have been recorded by means of the second procedure this is not entirely clear of all the cases as most investigators using biofeedback speak of their subjects' oscillating in and out of hypnagogia. Nonetheless, many biofeedback verbal reports are clearly made while the subjects are still in the hypnagogic state although perhaps in a 'lighter' stage.

An important problem arising from induction procedures is that of the possible confounding of the criteria of antecedent conditions that may distinguish the hypnagogic state from adjacent states (e.g. sleep deprivation, perceptual isolation, hypnosis) which share most or all of the hypnagogic features. Specifically, the hypnagogic induction procedures referred to above may be seen to be methods for inducing states other than the hypnagogic, e.g. rhythm and monotony are hypnotic procedural features,

ganzfeld and white noise are induction features of perceptual isolation techniques. Moreover, in respect to biofeedback methods, it is not always clear whether the resultant states of consciousness are not simply induced by relaxation and psychological withdrawal.

However, as I shall argue throughout this paper and in particular in Part Two and the later chapters in Part Three, the presence of the same antecedent, and sometimes of the same consequent, conditions in both hypnagogia and other states and mental processes does not so much confound the former with any of the latter as much as it points out strong relationships existing between hypnagogia and these other states, processes, phenomena or experiences.



## CHAPTER 4

### SENSORI-MOTOR PHENOMENA AND SYSTEMS OF CLASSIFICATION:

Hypnagogic phenomena have been classified by a number of investigators along a variety of dimensions. Some of these latter are clearly complementary to, or overlap with, each other whereas others traverse the whole field on independent dimensions. Since most of them are concerned with the phenomena of the visual modality I propose to discuss them in the process of examining hypnagogic phenomena in terms of their occurrence in the various sensory modalities.

#### Visual phenomena:

By far the best researched hypnagogic phenomena are the visual kind of which the most thorough classification in terms of content is still that of Leaning (1925). These phenomena include the following types: formless, designs, faces, figures, objects, nature scenes, scenes with people, "print or writing sometimes reported as 'in a foreign language'" (McKellar 1975, p.22: see also Maury 1853, 1878; Ladd 1892).

Formless: In this type belong waves of pure colours and light-charged clouds. This phenomenon known variously as ideo-retinal light, luminous dust, entoptic light, or Eigenlicht ("excitations of optic neurons arising from within the retina without benefit of light from the external world": Horowitz 1978, p.25) has been argued by various researchers to be the stuff out of which hypnagogic and sleep dream visions arise (see chapt. 15). Holt (1972) found no correlation between awareness of entoptic phenomena and the occurrence of hypnagogic imagery, although this piece of evidence does not necessarily argue against the possibility that in most instances, as Galton (1883) and Ladd (1892) contended, hypnagogic images form themselves too quickly for the relaxing consciousness to

be able to observe their formation.

Leaning (1925, p.310) considered this "cloud-effect" which "is so constantly spoken of as preceding some more definite picture...to bear the sort of relation to it that the calyx does to the flower...The clouds roll off and disclose a view, or in the case of the faces, the clouds form the stuff out of which they define themselves".

Designs: Leroy (1933) distinguished between the eigen-licht and "phospenes", the latter being patterns and geometrical designs sometimes having the appearance of objects (see also Hobbes 1651): They are often "patterns of perfect symmetry and geometrical regularity", "most beautiful decorative patterns, finials, curves, spirals, leaves, blossoms", "like a thin gauzy pattern hung through the room", or of "a plain material such as corded silk" (Leaning 1925, p.320).

Faces, figures, animals, objects: The seeing of faces is so widespread among the hypnagogic imagers that, as Leaning put it, it "almost suggests that there is a special 'face-seeing' propensity in the mind" (ib., p.310). This propensity, however, is only observed in the adults whereas "in the children's census nearly twice as many speak of stars and colours as of people and faces" (ib., p.311). Faces appear in a variety of ways but most often "they seem to come up out of the darkness, as a mist, and rapidly develop into sharp delineation, assuming roundness, vividness, and living reality" sometimes "one face forming 'through' another" (ib., p.312). On some occasions the faces are like "drawings made with phosphorus on a dark wall at night" and on others "a dim disc of light would suddenly appear and as suddenly brighten. There would be a whirling motion in the light which, with astonishing rapidity developed into moving figures" that often came towards the subject (ib., p.313). Although the appearance of faces is sometimes fragmentary and "flashed on and flashed out again suddenly", the process is usually one of gradual growth. The fragmentariness (sometimes only



the eyes are seen, or the nose, or the teeth), Leaning notes, appears to be confined to faces as we don't hear of cases in which an object appears in fragments and gradually builds itself up. This observation may not be altogether correct, however, since hypnagogic imagers sometimes see only the top part of a building or arches or cellars before they see the whole house. The aesthetic quality of the faces ranges from "transcendent beauty" to "hideous and terrifying" (see also Lukianowicz 1959, McKellar and Simpson 1954, McKellar 1957, 1979a), the latter sometimes accompanying children's night-terrors. They often appear to be looking at the individual in a very personal way and sometimes they make remarks about him. Likewise, figures appear in great variety, and so do animals and objects, e.g. horses, dogs, cars, temples, trees (Tournay 1941), flowers. Goethe, for instance, frequently saw a rose "which continually put forth welling petals from the centre" (Leaning 1925, pp.320-2).

Nature scenes: The seeing of landscapes, seascapes, and gardens is usually accompanied by feelings of admiration and joy. Leaning found that landscapes "form a large class of the visions of adults" but "do not figure at all in the children's census" (ib., p.324). She hypothesized that "the power to enjoy landscape and natural beauty is not one which develops early" (ib., p.325). Children tend to see more people, "things", and animals than landscapes and scenes. Landscapes "contrast with the 'faces' in being complete and entire from the first" and "agree with them in having a cloud-accompaniment" in the shape of "cloud formations which break and give a view of distant valleys or scenery in great brightness" (ib., p.325). More urbane landscapes are also reported in the form of "outstanding buildings of unusual construction" (ib., p.325).

Scenes with people: Leaning (1925) noted that "if beauty characterizes the landscapes, life and movement in every variety are the chief features which distinguish the

'scenes' from them" (ib., p.325). A peculiar characteristic of the scenes is that they have neither beginning nor ending, they are something like trailers of a cinema film. They can be little dramas in exotic settings or ordinary street scenes. They "almost invariably portray the lighter and pleasanter aspects of life" (ib., p.326) sometimes forming intelligible little wholes.

Print and writing: This phenomenon which has been reported by a number of subjects (see e.g. Maury 1853, 1878; Ladd 1892; McKellar 1975) may occur in a variety of forms and languages including one's mother tongue, a foreign, ancient, or even an entirely imagined language.

Other dimensions of classification:

As distinct from Leaning's (1925) classification by content, other writers have attempted to classify visual hypnagogic experiences along various bipolar dimensions, such as : external-internal (Jaspers; cited by Vihvelin 1948, p.365), hallucinatory-quasihallucinatory (Schultz 1930), distinct-shadowy (Leonhard; cited by Vihvelin 1948, p.366), visions of somatic connections-visions of psychic connections (Vihvelin 1948), perseverative-impersonal (McKellar 1957), subjective (Postcognitive, Precognitive, Unidentified) - objective (O.H. Myers 1957), meaningless i.e. formless, geometric forms - meaningful i.e. single objects, integrated scenes (Richardson 1969). Leroy (1933) also distinguished between the visions which are reproductions of recently seen objects, and the stereotypical terrifying visions of children.

Jaspers' classification has been criticized by Schneider (in Vihvelin 1948, p.365) on the grounds that the criterion of space is insufficient for determining the substance of some visual hallucinatory phenomena and that in the case of hypnagogic visions this is often connected with considerable difficulty. Personally, I find that the criticism is as general and vague as is the employment of the concepts of internal and external, objective and



subjective. There are, certainly, cases where one can use the concept 'internal' to mean subjective and, likewise, 'external' to mean objective, but in the case of hypnagogic visions the exchangeability or assimilation of these terms may lead to a great deal of confusion. As we shall see, hypnagogic subjects tend to place their visions 'in front' of them. There is no doubt that these are 'subjective' in the sense that they are only experienced by the subject, but they are clearly not 'internal' in the same way that thoughts, intentions, desires, or even reminiscences are. Moreover, since hypnagogic visions can also be experienced with open eyes and are then more clearly located 'externally', it will be very confusing to identify the 'external' with the 'objective' since the experience is still 'subjective' in the sense that it is experienced only by the subject.

Schultz's classification, although based partly on pathological cases, may be useful in that it suggests the employment of a cognitive dimension, that is, hypnagogic visions may be distinguished along a continuum of involvement and absorption. (This approach will be discussed in more detail later in relation to other states of the organism, and Tellegen and Atkinson's 1974 study on "Absorption").

Leonhard's distinction between vivid and shadowy hypnagogic visions does not appear to have any real classificatory value unless it can be related to particular physiological or psychological conditions of the organism, that is, unless it can be shown, for instance, that physical or mental fatigue or degree of absorption or relaxation correlate with the vividness of the hypnagogic imagery (see chapter on the stages of hypnagogia). On the other hand, vividness may turn out to be a useful indicator of certain personality variables (e.g. good visualizers vs poor visualizers, relaxed vs tense personalities).

In contrast to Jaspers', Schultz's, and Leonhard's classifications which may, in fact, be placed on a common dimension and identified as functions of the subject's attentional state, Richardson's classification of visual hypnagogic phenomena in terms of meaningfulness-

meaninglessness is not only arbitrary but also confusing. It is confusing in that, although his proposed dimension is in reference to content, the employment of the concept on which it is based is primarily dependent on the subject's mental state and/or past experiences, e.g. a triangle or a circle, which are meaningless in Richardson's terms, may convey important subjective meaning whereas an object or scene may not.

Leroy's first group of phenomena, viz. visions which are reproductions of recently seen objects, is very similar, if not identical, to that of Ward's (1883) "recurrent sensations", F.W.H. Myers' (1892) "cerebral after-images", Titchener's (1916) and Hanawalt's (1954) "recurrent images", Warren's (1921) "delayed after-sensations", Goodman and Downey's (1929) imaginal experiences, Vihvelin's (1948) "visions of memory-images", McKellar's (1957) and Oswald's (1962) "perseverative" kind, and will be discussed together later. His second group, that of the stereotypical terrifying visions of children, although arbitrary may suggest lines of research and classification along a number of dimensions, including that of the statistical incidence of pleasant as opposed to terrifying hypnagogic visions in childhood.

Vihvelin's (1948) data on hypnagogic visions were collected from the self-observations of three subjects over a period of two years (in one of the subjects, over a period of twelve years). From the data of these subjects (the remainder of a greater mass of data lost during the war) Vihvelin selected only "those...whose characteristic features are connected with the subject, i.e. traceable to the personality of the observer" (ib., pp.366-7) excluding those "phantastic" phenomena which, as far as he could ascertain, did not have any "especially established connection with the subject", i.e. they could not be found to have had a somatic or psychological connection with the subject's past experiences. He points out that, although phenomenologically the "connections" may suggest causal relationships, they are not to be taken as such since hypnagogic visions depend on "a coincidence of



general psychic and somatic factors which usually remain unknown to the observer".

Vihvelin subsumed under "visions of somatic connections" the following two main groups of hypnagogic visions:

(A) visions of memory-images, and (B) synesthetic visions. In the first group he includes (i) hypnagogic visions of objects on which the subject had concentrated intensely during the day; here he distinguishes between vivid memory-images seen in full wakefulness and hypnagogic visions of memory-images seen during sleep onset, both being species of the genus "recurrent sensations" which can be linked to earlier intense concentration; (ii) hypnagogic visions which are linked to earlier memory-images but not to an intensive previous sensory stimulus; (iii) hypnagogic visions that are called forth in an associative and reflex way, as in the case of seeing a car crash during the day and then later in the evening having the hypnagogic vision of a crashed car actually seen years earlier; (iv) hypnagogic visions which are called forth associatively by other sense modalities, e.g. auditory, thermal, tactile, as in the case of hearing the roar of a motorcar, having the hypnagogic vision of a wheel revolving synchronously with the motorcar noise, and being able to trace the vision of the revolving wheel back to a definite perception.

The second group deals with less frequently reported phenomena "where a certain sensation in the non-visual modality of sense calls forth an original visual sensation in the shape of a hypnagogic vision, and where it is possible to determine with evidence that the peculiar features of the provoking stimulus are reflected in the figures of the vision" (ib., p.371), as in the case of having a hypnagogic vision of a slightly cupped left hand and then becoming physically aware of one's left hand being pressed under his head as he is resting on the bed. Hypnagogic visions belonging to this kind are, as one of Vihvelin's subjects emphasized, "entirely different in their characteristics from other hypnagogic phenomena: they are fragmentary figures, silhouette-like, in which certain regions of the body are reproduced (but not in the shape of

memory-images); the image is always immovable, with opaque, greyish-white, blurred contours... Another characteristic feature is the prompt unexpected appearance, so that one always notices the hypnagogic vision first, and only later the stimulus necessary to provoke it, and thereby the genetic connection" (ib., p.372). These experiences Vihvelin calls "primary synesthetic hypnagogic visions" and distinguishes them from hypnagogic visions that are synesthetically caused but complemented by associatively kindred memory-images (ib., p.273). He suggests that synesthetic hypnagogic visions may be projections of parts of our body schema resulting from corresponding physiological changes.

In contrast to hypnagogic visions of somatic connections which are considered devoid of psychological contents, the hypnagogic visions of psychic connections are such that their appearance "can be traced back to a certain definite actual mental content, and...a psychologically comprehensible connection can be established between subject and hypnagogic vision" (ib., p.374). The contents of the earlier psychic experience may be abstract or concrete and the resulting hypnagogic vision may be direct or indirect: the direct one is that in which the mental contents "seem to transform themselves immediately into corresponding images, and which the subject can perceive with hallucinatory distinctness" (ib., p.375; see also Mayer-Gross 1929; Leroy 1933; Silberer 1965; van Dusen 1972); the indirect visions are those that occur at a more or less prolonged period of time after the original psychic experience. In this latter case the vision may begin as a memory image and "then the part of the vision springs up in which the contents previously experienced by the subject (e.g. as a train of thought either concrete or abstract) are given in a visualised form...Thus the earlier mental contents reappear in the shape of a hypnagogic vision" (ib., p.376). There are "faithful visualizations" in which "the representation of the object is given as an image of it", and "altered visualizations" in which "the mental contents tending to a visualization,



are given as images associatively related to the primary mental contents" (ib., p.376). As an example of "altered visualization" Vihvelin cites Kollarits' experience as he struggled with eyes shut one evening against falling asleep; combined with this struggle was an effort to find a possible connection between cyclophrenia and schizophrenia (see also Silberer 1965 on "autosymbolic" phenomena). As he grew sleepier and sleepier, Kollarits reports,

I could observe that there were leaps and bounds in the association of my ideas...; suddenly the thinking process ceased entirely and instead a plain appeared before my eyes, I felt as if I were looking from above on a blackboard, upon which two lines intersecting vertically become visible - the system of co-ordinates, and this geometrical system had a horizontal wavy line: the sinus-line, and a vertical one: the tangent-line, distinctive from each other along both lines - as if they were railway tracks - two small freight waggons were running. One of them was going from left to right on the sinus-line, the other from the top to the bottom along the tangent-line. They had no label whatever but I know that the first one corresponded to manic-depressive psychosis, the second (along the tangent-line) to schizophrenia, and that their movement ahead meant the course of both these diseases.

(Vihvelin 1948, pp.376-7)

As opposed to the above kind of hypnagogic vision, Vihvelin continues, "in which the actual mental contents must be interpreted as primary components, and the corresponding H.V. [hypnagogic vision] as secondary, we can often find H.V. where the reverse seems to apply, i.e. that a primary somatically caused H.V. - by means of a superimposition of subject's actual (often affective) mental contents - acquires its contents and 'psychic connection' only in a secondary manner" (ib., p.378). For instance, one of his three subjects reported that as he sat during a train journey with his elbows resting on his knees and his face in his hands feeling very drowsy but unable to sleep, he had the hypnagogic vision of a fragmented human face that was smiling ironically: "seeing this malicious mimicry", the subject reports, "I at once recognised the railway guard (by the awareness accompanying the vision)...Connection: an hour ago I had an altercation

with the guard, and had felt vexed at the injustice of that official" (ib., p.379).

Vihvelin concludes that "owing to the frequent presence of the accompanying awareness of significance and to the reshaping of the contents in a 'symbolic' way, the visions of psychic connections can - from the inner point of view - be compared to dreams, but on the other hand - from the viewpoint of formal peculiarities (elementariness and fragmentariness of the figures) - they are similar to visions of somatic connections" (ib., pp.379-380). He emphasizes, however, that "these hypnagogic visions have not been perceived in dream consciousness, but in the hypnagogic state, and that the observer regards these unexpectedly appearing phenomena with a feeling of strangeness and criticism". He also contends, in respect to the hypnagogic visions which have earlier psychic connections, that these earlier mental contents are connected with cerebral processes which may be reactivated later on during a hypnagogic state and give birth to hypnagogic visions: "thus, psychologically, the earlier mental contents appear as the primary or 'causative' factor. In case of such visualising processes it seems as if the psychic component had a 'constructive effect': out of the infinitely great number of our memory-images only certain images (associatively related to the previous actual mental contents) are chosen when creating the H.V., in order to bring forth some definite contents". Vihvelin also drew a distinction between hypnagogic visions appearing in "internal space" and those taking place in "external space".

Vihvelin's classification although detailed is nevertheless incomplete due to the limits imposed on it by the investigator himself. In the first place, he discarded all those reports that were "phantastic", i.e. that could not be related to the subject's past experiences. The puzzling question here is: If we cannot relate a present experience to a past one does it mean that there was not one to relate to or that we simply do not remember one? To opt for the first alternative is arbitrary. Also, by



discarding the "phantastic" reports without mention of the frequency of their occurrence in relation to those of discoverable "connections", he denied other researchers some useful information. As we shall see, there is evidence that these visions are very common and their occurrence may reveal a very important psychic component of human nature. Secondly, Vihvelin restricted his definition of the hypnagogic state by introducing the stipulation that the subject must not lose his consciousness of the situation during the experience, thus excluding beforehand hypnagogic dreams (this latter point is discussed in the chapter on the stages of hypnagogia). In respect to the distinction he draws between hypnagogic visions taking place in "internal space" and those occurring in "external space", since he does not provide any clarifications as to what he means by these terms there is not much one can say about them.

O.H. Myers (1957) distinguished between (A) objective, and (B) subjective hypnagogic images (he called them "Extra-Temporal Images"). The first group was made up of (a) Postcognitive images, that is, hypnagogic images that could be related to "past perceptive experiences of the observer", (b) Precognitive images "being the core of future perceptive experiences of the observer", and (c) Unidentified images, that is, hypnagogic images that could not be placed in either of the previous two kinds. The Postcognitive kind clearly includes all of Vihvelin's hypnagogic visions of "somatic connections" and could easily be extended to include his H.V. of "psychic connections". The Precognitive kind belongs in a class of its own very difficult to justify in a classificatory system since at the time of its occurrence it can only be classed together with the Unidentified kind (this latter being one of the kinds excluded from Vihvelin's classification). Its presence may, however, be justified if it is placed in a different dimension, namely, that of the awareness of significance accompanying a vision (see section on "accompanying awareness of significance"). The Unidentified imagery of a hypnagogic vision, Myers argues

(ib., p.67), may, in fact, belong to either the Pre-cognitive or Post-cognitive kind but its past or future actual occurrence is so far removed in time that at the time of the experience cannot be seen as belonging to either. Another possible explanation Myers offers for the occurrence of the Unidentified imagery is that it may belong to another mind, viz. it may be a thought in somebody else's mind which is being picked up by the hypnagogic subject. In regards to this hypothesis, he refers to Carington (1945) who proposes that if a thought - "K-object" - is shared by two subjects, then it becomes possible for subject A to learn of other thoughts in the mind of subject B.

Myers second group, that of Subjective hypnagogic images, refers to nightmarish experiences wherein one sees ugly and frightening objects or faces. Aristotle (1931, 462a) was the first to mention this kind of vision about which he noted: "some very young persons, if it is dark, though looking with wide open eyes, see multitudes of phantom figures moving before them, so that they often cover up their heads in terror". However, as Myers points out, in children susceptible to nightmares and persons suffering from delirium tremens, sometimes these frightening figures may only be elaborations of their imagination and when the light is turned on they are seen to be no more than household furniture such as chairs and tables. Myers calls these phenomena Subjective to distinguish them from those in the previous group which can be related to events in the external world. This group may, in fact, be classed as a member of McKellar's "impersonal" kind to be discussed next.

McKellar (1957, 1979b) distinguishes between "perseverative" and "impersonal" hypnagogic images. The former "are those whose content can easily be explained in terms of past experiences, particularly those of the day before" (McKellar 1957, p.42). For instance, one may have hypnagogic images of plants and flowers if he happened to have spent his day in a garden:



Recently I did a mixed weeding. That night I had a veritable hypnagogic botany lesson on the weeds of a New Zealand Garden. They were all there, docks, dandelions, convolvulus roots, and several more which I could not name although I had been dealing sternly with them all afternoon. I had not myself consciously decided on this review of the afternoon's events, but - like the typical hypnagogic imager - I watched the performance with interest.

(McKellar 1979b, p.95)

Leroy also writes:

When I was studying anatomy, I very frequently experienced a hypnagogic vision not rare among medical students. Lying in my bed with closed eyes I would see most vividly and with complete objectivity the preparation on which I had worked during the day: the resemblance seemed perfect, the impression of reality and, if I may say so, of intense life which emanated from it was perhaps even deeper than I experienced when facing the real object.

(Leroy 1933, p.28)

Leaning (1925, p.298), writing of "cases in which some scene, or some object has engaged concentrated attention during the day, and an absolute reproduction takes place spontaneously against the background of darkness", lists Flournoy's "visions" (Proc., SPR, vol. viii, p.453), Hobbes' geometric figures (Leviathan, 1651, pt. 1, ch. ii), Müller's microscopic preparations, and Ferriar's (1813, p.17) experiences as examples of this phenomenon. Titchener referred to these experiences as

recurrent images, those troublesome and haunting images to which most of us are subject at times: the tunes that run in our head and that we cannot get rid of, the rows of figures that obsess us after a long morning of calculation, the bright disk that keeps cropping up after we have spent several hours at the microscope.

(Titchener 1916, p.75)

Dallenbach (1924) noted that having travelled all day, when he lay down in the evening "the movement of the car was retained in kinesthetic imagery and was transferred in perception to the bed upon which I lay"; he also reported,

visual after-images of movement which were projected upon the field of my closed eyes or, with open eyes, within the darkness of the bed-room. The movement was toward me, a positive duplication of the perceptions aroused from watching the roadway. During the entire time of driving I kept my eyes fixedly upon the road directly ahead of the car...Stimulation was constant and of long duration; it was also intense, particularly during the last half of the trip which was made under the illumination of strong headlight.

(Dallenbach 1924: quoted by Hanawalt 1954, p.173)

Goodman (Goodman and Downey 1929) wrote of his imaginal experiences in connection with the spectacles he usually wore all day: "An image of spectacle rims ... always appears when the spectacles are off and the illumination is reduced to a minimum...This image is so extraordinarily like the perceptual experience that the observer has at times been deceived into thinking he was wearing his glasses when they were off. The failure to confirm his visual experience by a tactual one when he raises his hand gives him a feeling of bewilderment". Hanawalt reporting on his hypnagogic images of blackberries as he retired and closed his eyes after a day out picking the fruit, writes:

The images greatly impressed me for they were neither after-images in the usual sense nor were they memory images. The images were positive and appeared to be located in the eyes rather than projected. They were very vivid; they could be seen not just imagined as in the case of memory images. In this respect they were like the usual after-images. Introspectively they appeared to be retinal phenomena...My wife and I both saw idealized images;...In place of the almost prohibitive brier patch, the berries hung upon open shoots;... in our images not an imperfect berry appeared.

(Hanawalt 1954, pp.170-171)

Comparing "recurrent images" with Jaensch's (1930) eidetic images, Hanawalt (1954, pp.173-4) notes that "according to Jaensch, the eidetic images can be seen after a brief stimulation. Recurrent images, contrariwise, occur only after long and intense stimulation. Again, such evidence as we have seems to indicate that recurrent images are located in the retina; eidetic images are projected into



the environment. Recurrent images tend to occur with eyes closed or in very dim light; eidetic images can be seen with eyes open in broad daylight". However, this polarisation between eidetic images and recurrent images is not quite justified. Nor is Richardson's (1969, pp.22-23) subsuming of recurrent images under the heading of after images. Richardson argues that "though the circumstances in which these visual recurrent images appear might lead to them being called hypnagogic images the antecedent conditions of prolonged and intense retinal stimulation makes them a distinctive phenomenon and in this respect more like the after-image".

But, to begin with, recurrent images do not occur only after long and intense stimulation: an attentive glance may suffice, as both Maury (1878, p.87) and Vihvelin (1948) noted. One of Vihvelin's subjects, for instance, reporting about the hypnagogic vision of "a heap of electrocardiograms" he had one evening, he writes:

In that evening, before leaving the laboratory and before turning out the laboratory lamp, I threw an attentive glance on my working table, where the heap of the electrocardiograms was seen. This was the last relatively intense optical perception I had that evening. The image of the vision corresponded exactly to the earlier perception.

(Vihvelin 1948, p.368)

Secondly, the location of recurrent images in the retina or "in the eye" as opposed to being projected into the environment is rather confusing and misleading. What is meant by "located in the retina"? Describing his own hypnagogic images, Hanawalt (ib., p.171) says that "they could be seen not just imagined as in the case of memory images. In this respect they were like the usual after-images". But if something is 'seen' this something must be placed in front of one. This is not only logically necessary but experientially discoverable: even in the case of the usual after-image this is projected in front of one (although, according to Emmert's law the size of the image varies depending on the distance of the surface on which it is projected). In fact, Hanawalt closes his paper leaving the argument open to the possibility "of

breaking up the eidetic image into two types: recurrent images and visualizations" (ib., p.174).

Richardson (1969) argues that recurrent images are not perfect counterparts of original sensations or perceptions but "idealized images" (see also Hanawalt above). He points out that

In one study of eidetic imagery it was found that an 'idealized image' of a leaf resulted when a series of seven different shaped leaves had been previously presented one at a time. Such reports are similar to the results of experiments on composite photography (Galton 1883) where, for example, the heads of four or five women may be photographed in the same position on the one negative producing an idealized woman.

(Richardson 1969, p.23)

He continues his argument pointing out that in stereoscopic experiments in which different full-face photographs are presented to each eye the result is often a fusion of the two which is typically experienced as more attractive than either face when seen alone.

Be that what it may, the fact remains that not all "recurrent images" are "idealized" ones, and that, as the evidence indicates, some are "absolute reproductions" of original sensations or perceptions (e.g. Leaning 1925; Lhermitte and Sigwald 1941; Vihvelin 1948).

In contrast to the "perseverative" hypnagogic vision which is characterized by the recognizability of the imagery contents, that is, the subject is cognizant of the fact that what he sees are images of objects that engaged his sensory attention during the day, the content of the "impersonal" type, on the other hand, "cannot easily be located in the imager's personal experience. Moreover, the images, by virtue of their originality, often seem strange and foreign to the personality of their author" (McKellar 1957, p.43). In this type belong beautiful or grotesque faces (often the cause of night terrors in children), angelic or demoniacal visions, strange futuristic cities, etc. The originality-unrecognizability of this latter type of hypnagogic imagery has been noted by numerous researchers. Müller (1926, p.20), for instance, talks of fantastic figures of men, animals, and so on that



come to him in the drowsy state before falling asleep "for a half-hour, until they finally pass over into the dream images of sleep" and which are hardly recognizable. Allan Poe (1949) talks of their "absoluteness of novelty". Greenwood (1894, pp.14-20) says that they "are like none that can be remembered as seen in life or in pictures". Collard (1953, p.233) notes that "often they surprise and delight by their beauty and originality".

Leaning's investigations yielded the following statistical data in respect to the number of subjects who reported as being able to recognize objects and people in their hypnagogic images (Leaning 1925, p.377):

All matter quite unrecognized	61%
Unrecognized, with one, two or three exceptions	5%
Usually, or often recognized	20%
Partially recognized and unrecognized	14%

In view of the evidence presented in the reports above, McKellar's two categories of hypnagogic phenomena, the "perseverative" and the "impersonal", are clearly too general. To begin with, the "perseverative" type includes at least two groups of phenomena that warrant more attention and which, with wider research and more detailed analysis, may be seen to form two sub-classes of the same category or even two entirely separate classes. The evidence so far suggests that the perseveration of images is of at least two kinds: (a) images which, in Leaning's words, are "absolute reproductions" of objects seen during the day (or sometime in the past), and (b) images which are not exact reproductions of their originals in the sense that they are not seen exactly from the same angle, and may exhibit added characteristics which, although they may belong to the nature of the object, were not actually present in the perception; moreover, this latter case may give rise, by some form of association, to experiences of similar objects. Of course, since images are not restricted to the visual modality, perceptual experiences in other parts of the sensorium may give rise to images in

their respective modalities. For instance, listening to or performing Beethoven's music for long hours may not only, or necessarily, result in an accurate hypnagogic reproduction of the performance but may also, or instead, lead to auditory hypnagogic images of Beethovenesque compositions; similarly, travelling by car all day one may have kinesthetic hypnagogic experiences of accelerating, swerving, etc., which do not literally correspond to actual experiences that took place during the course of the travelling. Returning to the first sub-class, one may also notice that it contains perceptual details which are not within the normal memory capacity of the individual and which, for that reason alone, may surprise the subject as they make their appearance in the hypnagogic reproduction.

It seems to me, then, that in the "perseverative" type we are dealing with two groups of phenomena, the first having a great deal in common with eidetic imagery, while in the second a certain amount of memory and 'imagination' are implicated. Concerning the 'impersonal' type, in this category we may have even more subdivisions but suffice to point out at this stage that the contents of this type are not all fantastic and unrecognizable although the majority of them might appear to be so at first sight. Besides the evidence afforded in Leaning's investigations, recent research has, also, shown that a not inconsiderable amount of hypnagogic imagery is quite recognizable. For instance, in Oliver's (1976, p.116) study when one of the two subjects "saw people in his images...knew who they were".

Indeed, in view of the evidence, McKellar's two-fold classification might be more accurately replaced by a four-fold one, namely: (a) reproductive, (b) perseverative, (c) familiar, (d) unfamiliar. The first class will comprise "absolute reproductions" of perceptual experiences that took place during the day (this will include (i) and (ii) of Vihvelin's "visions of memory-images"): the second will be made up of perseverations, that is, of images that persist in a 'reverberative' and 'echoic'



manner implying a certain degree of departure from the exact original and allowing for the introduction of a restricted play of imagination (this will include Hanawalt's visions of "idealized" objects); the third class will contain images of immediately or easily recognizable objects which, however, did not form part of the subject's perceptual experiences of that day (this may include (iii) and (iv) of Vihvelin's "visions of memory-images"); the fourth class will consist of entirely phantastic images of (i) plausible and (ii) implausible objects, that is, of things, faces etc., whose appearance (shape, construction, etc.) is plausible but outside the subject's conscious memory - indeed, they may never have been encountered in waking life - and of things, faces, and so on, whose appearance (shape, construction, behaviour etc.) is implausible (flying monsters, angels, devils, and so on). In sub-class (i) we may include Myers' "Unidentified" images.

Naturally, this four-fold system does not exclude combinations of categories - on the contrary, some hypnagogic experiences will fall into one combination or another - for instance, the experience of a hypnagogic reproduction of a childhood event will be classified as a reproductive familiar hypnagogic experience. Moreover, the same event might, retrospectively, be classed as reproductive unfamiliar if the subject does not recognize it as a childhood event at the time but does so subsequently (perhaps as a result of visiting the location of the event or seeing a photograph of the location or through some other vital clue or through hypnosis). This latter case would, I think, fruitfully suggest that at least some hypnagogic images might be traceable to distant or subliminal perceptions. The proposed four-fold system may also be seen in terms of time and memory, stretching from the immediate to the very distant, to the forgotten.

#### The character of visual hypnagogic phenomena:

In this section I shall list the salient features of visual hypnagogic phenomena. Since all perceptions, quasi-perceptions and hallucinations involve a form of cognition,

some of these features to be listed below will be found to overlap with the 'more psychological' features of hypnagogia to be discussed separately in chapter 7 ("Cognitive-affective characteristics").

As with her classification by content, here again Leaning (1925) made a considerable contribution. Although the list of features she compiled is not exhaustive it has, nonetheless, been confirmed and enriched by later investigators. Her list includes: variety and change, duration and speed, shape and scale, point of view, illumination, colour.

In regard to change Greenwood (1894) reports of "a little cloud of bright golden sparks" that become larger and more scintillating turning themselves into a flock of sheep and back into sparks again. One of Galton's (1883, p.119) correspondents refers to sparks or gold specks that appear in front of an image of pink roses effacing them in the process. Often, the hypnagogic visions are "a series of ever-changing faces - all sorts of weird faces merging one into another. Sometimes they leer and grin horribly, and sometimes they are strong, clearly defined, bearded, biblical faces" (Dudley 1979, p.86). The variety is practically endless: "There are vignettes, charming, fantastic or comical. There are interiors, countryside, and mountain scenery, seascapes, glorious snow scenes" (Collard 1953, p.233).

Leaning's impression is that incoherence and the absence of association prevail in the change of hypnagogic imagery. Alexander (1909) also notes that "if there be such a thing as irrelevance, these images show it". He notes that a hypnagogic image "undergoes transformation before the eyes and inspite of any efforts I may make to preserve it unchanged" (ib., p.624). Archer (1935, p.42) writes: "...while lying wide awake, but with my eyes closed, [I] find human faces growing out of the dark, and undergoing changes of expression quite independent of any desire or intention of mine". They are "independent of any effort of imagination", they are "not imagination at all, but entirely outside (the subject's) mental action"



(J. SPR, 1899, vol.9, p.121). They are "strikingly different from any deliberate visualization" (Leaning 1925, p.304), they are involuntary and appear to be seen "in the eye" not the brain as is the case in visualization. They also "differ from ordinary images of memory and fancy in being much more vivid, minute, detailed..." and, again, in being seen "in the eye" (ibid., p.305). Collard (1953, p.253), too, says that she is "observing them, not consciously creating them" and that "I find by experiment that it is possible to hold a chosen thought-image in the mind, at the same time as, and quite independently of the visions. I am aware of consciously creating and controlling the thought-image, while the others appear automatic and objective" (p.235). Similarly, McKellar (1959, 1979b) reports that some hypnagogic imagers are capable of carrying on a conversation while the imagery process continues. He offers a personal instance in which he was "able to continue having visual hypnagogic images even during performance of such a complex act as manipulating the sound recorder on which he was recording his introspective reports" (McKellar 1959, p.25). Also, when one of his subjects was asked to inject into his hypnagogic imagery 'ordinary images', he reported that "the hypnagogic sequence continued and the ordinary images did not blend with it" (McKellar 1979b, p.101).

Most subjects keenly point out the externality, vividness, sharpness, and detail of hypnagogic visions. They are so sharp and detailed, as one subject put it in respect to faces, "I could see the grain of the skin" (Leaning 1925, p.305); they possess "a microscopic clearness of detail" and one can "see into the material without its being made coarser as it would appear through a magnifying glass" (ib., p.305). Another subject remarked that their "clearness and solidity" is such, "I have the impression that what I am seeing with my eyes shut must be before me" (J. SPR, July 1898, pp.269-70). They are like a movie in 3-D (Collard 1953, p.233) and often "as vivid as really 'being there' as compared with looking at images" (Oliver 1976, pp.116-7). Even when subjects use

the expression "in the head" when referring to hypnagogic experiences they either implicitly or explicitly assign some distance to the objects seen. W.T. Stead (1891, p.26), for instance, writes: "I saw all that without opening my eyes, nor did my eyes have anything to do with it. You see such things as these, as it were, with another sense which is more inside your head than in your eyes... The pictures...simply came as if I had been able to look through a glass at what was occurring somewhere else in the world". Greenwood (1894), too, although he states that the hypnagogic images are in his head, he places them five or six feet away. Similarly, Alexander (1909, p.623) noted that "they tend constantly to impinge upon 'real' space". As one of Ardis and McKellar's (1956, p.23) subjects remarked, "it seemed to be projected before me like a coloured film...It was quite unlike a mental image".

The "sense of reality, of life-likeness" (Leaning 1925, p.314; also Rouquès 1946) pointed out by many subjects in reference to their hypnagogic imagery often expands into "feelings of heightened reality" (Ardis and McKellar 1956, p.26). It is interesting to note in this respect that Freud (1953), among others, referred to hypnagogic visions as "hallucinations" and not merely as images.

The following example from Stead (1891) illustrates the autonomy, changeability, and life-likeness of hypnagogic visions:

There was no light in the room, and it was perfectly dark; I had my eyes shut also. But notwithstanding the darkness, I was suddenly conscious of looking at a scene of singular beauty. It was as if I saw a living miniature about the size of a magic lantern slide...It was a seaside piece. The moon was shining upon the water, which rippled slowly on to the beach...It was so beautiful that I remembered thinking that if it continued I should be so interested in looking at it that I should never go to sleep. I was wide awake, and at the same time that I saw the scene I distinctly heard the dripping of the rain outside the window. Then suddenly, without any apparent object or reason, the scene changed. The moonlit sea vanished, and in its place I was looking right into the interior of a reading-room...I remember seeing one reader...hold up a magazine or book in his hand and laugh. It was



not a picture...it was there. The scene was just as if you were looking through an opera glass; you saw the play of the muscles, the gleaming of the eye, every movement of the unknown persons in the unnamed place into which you were gazing.

(Stead: quoted by Leaning 1925,  
pp.295-6)

In the above excerpt Stead referred to the hypnagogic vision as a "living miniature". Indeed, the majority of these visions appear to be experienced as miniatures (e.g. McNish 1830; Alexander 1909; Leaning 1925). But although small, the images are not felt to be seen at a great distance; in fact, they are never located further than two or three feet from the eyes, and in some cases, as we saw earlier are thought to be 'within' the eye itself. Maury (1878) and McKellar and Simpson (1954, p.271) noted that both micropsias and megalopsias occur in the hypnagogic state, e.g., "one subject reported seeing people known to him who 'always grow bigger and bigger until I cannot picture them, or fade away to a single point'". The occurrence of megalopsia has also been reported by Hollingworth (1911) who saw hypnagogically a huge bus alighting on a real concert stage on which a performance was in progress.

Tournay (1941, p.210) and Ardis and McKellar (1956, p.26) have also noted the occurrence of polyopia in the hypnagogic state. For instance, the latter two authors reported: "Rupert Bear with an elephant sitting in a toy tank going up and down hills...a whole string of bears and elephants one behind the other like a string of sausages". Another feature of hypnagogia reported by, among others, Silberer (1965), Hollingworth (1911) Vihvelin (1948), and Ardis and McKellar (1956) is that of synaesthesia, i.e., phenomena in which sensations in one modality call forth sensory impressions belonging to another. Hollingworth (1911, p.101), for example, reported that, as he became drowsy while attending a concert, the three finishing blasts of the musical piece turned into "the movements of some huge bug which came sailing from behind the wings, suddenly alighting on the stage, first on the two hind feet, then bringing down the middle pair, and finally

the two front feet with the final blast".

On the whole, hypnagogic visions are brief in duration changing speedily from one form into another. James (1890), for instance, reported seeing "a thousand different objects in ten minutes", and Müller (1848) referred to the "rapidly changing forms". One of McKellar's (1972) subjects noted that his images changed "at the rate of about one every three seconds". On the other hand, Taine (1883) spoke of the images becoming steady and lasting, passing slowly by and sometimes remaining.

The angle from which hypnagogic visions are seen is sometimes very peculiar, like, for instance, seeing Humpty-Dumpty from the back or seeing a stretch of tuft from an angle that would normally require one "to lie very flat on the gravel walk, with one's face close to the turf" (Leaning 1925, p.335), and "now and then they are presented sideways or upside down" (Collard 1953, p.233). Other angles include sections 'through' earth, sea, or air.

Another feature of hypnagogic images is the manner in which they seem to be illuminated. The light appears diffused. Although the majority of images reported are in daylight with plenty of sunshine, even in night scenes one comes across this characteristic diffusion of light which renders them vividness and distinctness and appears rather to be internal to the seer, "a penetrative quality in the seeing" (Leaning 1925, p.336). Again, most reports abound in expressions like "strange liminosity", "liquid fire", "gorgeously coloured", "endless variety of colours". Müller (1826, p.20), for instance, talks of highly illuminated and coloured images. Ladd (1892, p.299) reports: "by far the purest, most brilliant, and most beautiful colours I have ever seen, and the most artistic combinations of such colours have appeared with closed eyes in a dark room". Collard (1953, p.233) writes: "The colour is wonderful beyond anything I can describe, though occasionally they appear in black and white. I seem to see them as a rule in a clear, bright, crystal light: sometimes they are irridescent, as though seen through a rainbow". O.H. Myers (1957, p.66) writes that the "subjective" hypnagogic images of his childhood "were vividly and



brightly, though unnaturally, lit. They might perhaps be described as being made of fire".

Although, on the whole, hypnagogic visions are characterised by autonomy, i.e., they appear and undergo changes independently of the subject's will (Baillarger 1846; Maury 1848; Galton 1883; Greenwood 1894; Alexander 1909; Leaning 1925; Leroy 1933; Archer 1935; Collard 1953; Oliver 1976; McKellar 1979), on occasion the subject is able to exert some control over their generation and subsequent transformation (e.g. Burdach 1839; Hervé de St. Denis 1867; Galton 1883; Ladd 1892; Herrick 1895; Mitchell 1896; McKellar 1957; Oliver 1976). The degree of control varies considerably from one individual to the next. For instance, Mitchell (1896) could call up visions before falling asleep but once they appeared he was not able to control them: they would change and disappear by themselves. Similarly, Goethe, we are told (Galton 1883),

whenever he bent his head and closed his eyes and thought of a rose, a sort of rosette made its appearance, which would not keep its shape steady for a moment, but unfold from within, throwing out a succession of petals, mostly red but sometimes green, and that it continued to do so without change in brightness and without causing him any fatigue so long as he cared to watch it.

(Galton 1883, p.115)

A correspondent to the Journal of the SPR (July 1898, p. 269) stated that she had trained herself by cultivating her concentration "when in the dark, to see the letters of the alphabet, one by one - a gold thread on a black ground": as a result she began to experience spontaneous hypnagogic visions of letters. Burdach (cited by de Manacéine 1897, p.239) was able to make his terrifying hypnagogic faces disappear by concentrating his attention on architectural forms that produced kaleidoscopic figures. One of Galton's (1883, pp.115-117) correspondents noted that, although "when the process is in full activity, I feel as if I were a mere spectator at a diorama of a very eccentric kind, and was in no way concerned with the getting up of the performance", by an effort of will he was able to bring back to its "starting-point" the image of a cross-bow that had undergone nearly a dozen changes (ib., pp.115-

116), and on another occasion he willed the appearance of the image of a rosebud and when it appeared he "forced" it to open its petals (ib., pp.117-118).

On this subject Ladd (1892, p.303) writes: "very frequently I have only to choose some simple schema such as would serve as a frame-work for a corresponding object, fixate it in idea with closed eyes and will steadily to have it appear, and in due time it will more or less completely construct itself in the retinal field". Herrick (1895) noted that although hypnagogic images rise involuntarily they can be made to last for a short while when close attention is concentrated on them whereas a sudden movement would make them disappear. More recently, McKellar (1957, p.41) reports that, although rare, sometimes subjects can control and even participate in their hypnagogic visual stories. Oliver (1976, p.116) reports that one of his subjects "many times shifted his vantage point while looking at a hallucinated object and looked at it from different directions in space". In the last century, Hervé de St. Denis (1867) claimed to have been able both to generate hypnagogic imagery and participate in it. Other investigators who have reported the ability to create and/or control hypnagogic visions include Maury (1878), Binet (1894), Delage (1903), Janet (in Delage 1903), Woolley (1914), Warren (1921), Leroy (1933).

A number of workers (e.g., Maury 1878; Alexander 1909; Leaning 1925; Ardis and McKellar 1956; Oliver 1976) have noted that attending to the hypnagogic visions increases both their duration and frequency. It has also been noted that, contrary to their definition, these images do not always lead to sleep (e.g. McNish 1830; Maury 1848, 1878; Alexander 1909; Rouquès 1946; Collard 1953; McKellar and Simpson 1954; Myers 1957; Green et al 1970). In addition, although in the main they are experienced with closed eyes, they are also seen with the eyes open (e.g., Hervé de St. Denis 1867; Müller: cited by Leroy 1933; Alexander 1909; Leaning 1925; Leroy 1933; Rawcliffe 1952; McKellar and Simpson 1954; Myers 1957; McKellar 1972).

In general, hypnagogic visions are pleasant and even



humorous. Indeed, whole comic scenes are often enacted in a hypnagogic state with or without the direct participation of the imager (e.g., Leaning 1925, p.319; McKellar 1979b, pp.97-98). However, they may sometimes be frightening. In the latter case they cause the subject to return to the full waking state.

#### Auditory phenomena:

In describing their visual hypnagogic experiences many subjects refer to images of people making mouth movements like those of speech but, just as in a silent movie, no sound is heard; the same is said of animals, cars, sea-waves, etc.. Occasionally, appropriate sounds accompany the movements; more often voices of people out of view are heard, and less frequently music. As one subject wrote: "When in bed I see in the wall a round window through which I not only see but hear all sorts of things. One morning I saw hundreds of bluebottles and could hear them buzzing... Another night I saw and heard aircraft". (Dudley 1979, p.87).

Some people when falling asleep hear crashing noises, bangs and explosions Mitchell (1890) "localized within the skull" (Critchley 1955). A usual auditory hypnagogic experience is the hearing of one's name being called (e.g., Maury 1848, McKellar 1957, Oswald 1962), another is the hearing of a doorbell ringing. Often the sounds are meaningless, or so they seem. Sometimes they are neologisms, e.g., "Lacertina Wein" (Kraepelin 1906), "they are exposed to verbally interlection" (Froeschels 1946), "or squawns of medication allow me to ungather" (Oswald 1962), "anzeema" (van Dusen 1975), irrelevant sentences containing unrecognizable names like "Bill Hambra - Ju (sic) know him" (Hull 1962), pompous nonsense often characterized by unintellectual wit, e.g. "Buy stocks in the fixed stars. It is remarkably stable" (Alexander 1909). "He is as good as cake double" (Schjelderup-Ebbe 1923), "A leading clerk is a great thing in my profession, as well as a Sabine footer-tootro" (Archer 1935). (Oswald 1962, mentions a collection

of 'witty' "dream tags" that appeared in "The New Statesman" 1960, Vol.59, p.930 and Vol. 60, p.42). Archer (1935) reports that often as he dozed off while reading he found himself substituting hypnagogically the last line of a poem or continuing with an extra line, or even composing an entirely new couplet quite meaningfully. Maury (1978, p.96) spoke of "sudden reproductions of sounds or notes which had struck the mind without its knowledge". Sometimes quotes, references to spoken conversation, and remarks directed to oneself are reported (e.g., Oliver 1976) some of which are apparently part of the visual scene while others seem to be unrelated to it. Arnold-Forster (1921) reports hypnagogic experiences in which a certain sentence, apparently unrelated to her thoughts at the moment, would come through to her clearly, followed almost immediately by a visual translation of its contents, e.g., the sentence "newly fledged birds on a tree - all grey" gave rise to its visual equivalent. On other occasions, hypnagogic auditory experiences may be meaningful responses to one's thoughts of the moment (e.g. Swedenborg 1977, van Dusen 1972) or somehow related to one's thoughts prior to the experience (e.g. Hoche 1926, Oswald 1962). Froeschels (1946) noted that mostly statements made in one's auditory imagery are egocentric, i.e. they are not directed to anybody.

Leaning (1925, p.345) remarked that "the impression conveyed is that there is something about them [i.e. auditory images] which corresponds to the colour, perspective, etc., of the visual images, and probably with sufficient data we might find every point paralleled". Oliver's (1976, p.8) impression from his own experience is that "auditory images resemble the visual imagery in that they often appear at first to be meaningless, but if their symbolic connections can be determined, a meaning can be deduced".

In a recent investigation carried out by McKellar (1975, 1979b) with a group of 400 New Zealand University students, auditory imagery was found to be less common than the visual. The results were:



Visual

Male 48%

Female 61%

Auditory

Male 31%

Female 38%

Foulkes and Vogel (1965) also found that "hypnagogic experiences are primarily visual in character" (ib., p.234). The results of these investigations disconfirm McKellar and Simpson's (1954) earlier conclusion that auditory hypnagogic experiences predominate.

Olfactory and gustatory phenomena:

Hypnagogic smells vary from "a horrible stench" to the smell of a rose that "smelt much nicer than ever a real rose could smell" (Leaning 1925, pp.348-9; also Maury 1878, p.98; Mitchell 1890). The smells are often, but not always, accompanied by an appropriate visual image (e.g. Galton 1883, Greenwood 1894, McKellar 1957, Dudley 1979). Some hypnagogic smells are so realistic that people may get out of bed, for instance, to make sure that they have not left the oven on or that there really isn't a gas leakage somewhere in the house. Maury (1878) and Leaning (1925) also reported gustatory images.

Somesthetic, kinesthetic, tactile, thermal phenomena:

In this group belong experiences called by Mitchell (1890) "primary sensory stuff" e.g., "a feeling of rending", "a shock like that which a sudden arrest of motion causes", "a bolt driven through the head", an "upward surge of indescribable nature", "an electric sort of feeling", "skin sensations as of an electric shock" (Oswald 1962). Similar descriptions were also given by Roger (1931). Both Mitchell (1890) and Roger (1931) speak of the "numbness, or swelling mounting rapidly from the extremities or the epigastrium to the head whereupon the shock occurs. One may be given the description of the head swelling like a balloon till it bursts with an explosion" (Oswald 1962, p.89).

Tactile sensations include "a sense of cold water poured over the head" (Leaning 1925, p.350), the feeling

that one is being touched (Lukianowicz 1959; James 1975, p.74), "a feeling of 'hot' flow down one or both legs" or from one arm to the other (Oswald 1962, p. 89: also McKellar 1957), a pain shooting from neck to finger-tips, buzzing in the head, a sudden spasm (Oswald 1962, Critchley 1955).

Feelings of bodily distortion or "body image disturbances" (McKellar 1979b) include the enlargement or shrinkage of parts of the body, the disappearance of parts of the body, the blurring of bodily outlines or parts of it (Sartre 1978), "mouth distortions" (Isakower 1938), weightlessness. Sartre (1978, pp.45-46) notes that "One's body is but vaguely felt, and even more vaguely, the contact with the bed sheets and mattress. The spatial position of the body is but poorly localized. Orientation is confused. The perception of time is uncertain".

Another phenomenon, that of myoclonic jerking (e.g., McNish 1830) may vary from mere twitches (McGlade 1942) to violent spasms (Critchley 1955, Oswald 1962) which tend to appear en masse for nights or weeks and then disappear for a period to reappear again (Roger 1931, Oswald 1959b). This phenomenon seems to be statistically very common, occurring sporadically to more than 80% of the normal population (Oswald 1962; see also de Lisi 1932; Pintus and Falqui 1934).

Another interesting phenomenon in this group is the experience of falling which is "more uniformly associated with a bodily jerk than are the other varieties of bodily shock" (Oswald 1962, p.90). Quite often the fall forms part of a hypnagogic 'dream' in which the subject, for instance, finds himself falling off the cliff to escape a ferocious beast, or off a toppling ladder (Harriman 1939), missing a foothold while climbing steps or tumbling down the stairs at their home (Oswald 1962). In such cases the subsequent waking may be the result of the subject's alarmed attempt to arrest the fall, or the outcome of the imaginal impact.

Thirty-three among 134 persons Oswald questioned said that "falling was the commonest of their types of sensory



experience accompanying a jerk". Harriman (1939) reported the falling phenomenon as occurring in 27 out of his 44 subjects (61%). McKellar (1957) reported that 144 out of his 182 subjects (79%) had falling experiences. It is possible, McKellar (1979b) suggests, that this phenomenon, so obviously related to muscular tension and relaxation, is a universal one. On the other hand, Foulkes and Vogel (1965) encountered only 1% of falling experiences in their subjects' reports and an extremely low incidence of other bodily distortion experiences. These writers argue that the high incidence reported by other investigators is probably due to the fact that these experiences are startling and tend to arouse the subject "whereas other, more frequent hypnagogic experiences go unnoticed because they are less unusual" (p.242). However, the Foulkes and Vogel (1965) study may suffer from at least two methodological inadequacies. First, there was unequal sex representation (8 males, 1 female) in the sampling. In fact, the one and only female in the sample contributed some of the most exceptional material (see also Vogel et al 1966); it is possible, for instance, that females are more susceptible to falling experiences than males, and this was prevented from being demonstrated because of the unequal representation. Second, it is not known yet how hypnagogic interruptions affect subsequent hypnagogic experiences, that is, it is possible that interruptions are not at all conducive to the appearance of falling or to any of the other phenomena mentioned above.

Grouping all the above experiences together McKellar (1979b, p.104) reported that they occurred to 21% of his male and 35% of his female 400 New Zealand university student subjects.

In respect to the aetiology of these phenomena, Oswald (1962) proposed what I consider an unsupported hypothesis. He argues that

the sudden sensory and motor phenomena could be thought to be due to an abrupt increase of cortical facilitation accompanying arousal. Many people may experience the 'fall' or the jerk as causing arousal rather than vice versa, but I do not think one can rely on

this subjective impression of the sleeper... the belief that a fall, a bang or a jerk was responsible for awakening is a simple rationalization.

(Oswald 1962, p.95).

This argument of "sudden arousal response" is unsound on both logical and evidential grounds. First, it is a peculiar assertion to say that a person wakes and then feels a jerk, a bang, sees a flash of light or feels as if falling, because such an argument necessarily ignores the fact that something caused the subject to wake in the first place. Now, Oswald wants to argue that that something is arousal itself, that is, the subject wakes suddenly and the very suddenness of "cortical facilitation" in arousal is experienced as jerks, bangs, flashes of light or falling. This argument, however, is not only counter intuitive but also it does not answer those occasions where husbands and wives are shaken by their partners in the midst of their myoclonic jerks, while falling asleep, to catch themselves kicking or twitching, or, in the case of being awakened at the end of a series of jerks, to deny of actually having them. In fact, Oswald (1962) himself provides evidence and arguments in support of the latter case thus appearing to posit that sometimes the jerks take place during light sleep (and the hypnagogic state) and may on some occasions go unnoticed by the subject, and sometimes the jerks are the result of sudden cortical facilitation accompanying arousal.

Moreover, there is an obvious absence of reports of bangs, jerks, etc., by subjects awakened from light sleep in sleep laboratories: if these phenomena were due to a "sudden arousal response" then subjects shaken out of their sleep and questioned about their immediate experiences should have furnished us with a wealth of such reports. On the other hand, most of these experiences appear to take place at sleep onset, that is, during a process of diminishing cortical activity, and the phenomena are nearly always reported as causing the subject to return to wakefulness. Both in the cases of proprioceptive and exteroceptive stimuli being present at the moment of waking,



the subject is clearly 'brought back' either while in the middle of the event or afterwards, or in the middle of a psychological incorporation and transformation of the event into a dream experience such as hearing a pistol shot or falling off a cliff. In the latter, for instance, it is clearly the case that one 'dreams' of falling, or at least feels as if falling, and then wakes up: there have been no cases where the falling experience was reported as taking place after the person had woken up. To say that one cannot rely on the subjective impression of the person who is in fact having the experience is to cast doubt on the very method of collecting reports in the whole area of sleep.

Oswald draws attention to the argument that even a wakeful person's judgment of the time relations of two nearly simultaneous events may be unreliable and that this, too, may be determined by the subjective significance he attaches to the events (see also Titchener 1908 on this). My criticism is not to support any argument to the effect that a sleeping or half-sleeping person's judgment of serial happenings is always to be taken on its face value but rather to point out that (a) such reports as there are must be taken together with other converging data, such as laboratory records, and (b) evidence cannot be dismissed merely on theoretical grounds, especially if this evidence appears to support an already existing hypothesis whose formulation is the end product of accumulated reports.

It is possible, and this point will be developed in later chapters, that cortical arousal or wakefulness plays a secondary role in the experiencing, and possibly no role at all in the causation, of the majority of hypnagogic events. This, of course, is not to deny that a certain degree of arousal during the occurrence of a hypnagogic event is necessary for the registering of the experience. Indeed, as we shall see later, in some cases the process of awakening itself may be a requirement for both the occurrence and the registering of the event.

The hypnopompic variety:

When Myers (1903, p.125) coined the term 'hypnopompic' he defined it as "pictures consisting generally in the persistence of some dream-image into the first moments of waking" (see also Aristotle 1931). On emerging from sleep the subject often opens his eyes to find that the dream continues, and that having shifted his attention to an object in the real world of his room the dream imagery is somewhat interrupted but resumes its full strength as the attention is removed from the immediate surroundings. The following is a hypnopompic experience reported by the philosopher Spinoza:

One morning, as I woke out of a very heavy dream (it being already day) the images which had come before me in my dream remained before my eyes as lively as if they had been the very things, and especially that of a scurvy black Brazilian, whom I had never seen before. This image vanished for the most part when, in order to divert myself with somewhat else, I cast my eyes on a book or any other thing; but so soon as I removed my eyes from their object without looking with attention anywhere the image of this same negro appeared as lively as before and that again and again, until it vanished even to the head.

(Pollock 1912: quoted by Leaning 1925, pp.353-54)

Sometimes hypnopompic images appear in colours complementary to those seen in the dream. De Manacéine (1897, pp. 278-281) cites numerous examples from Gruithuisen (1812), Burdach (1839), Meyer (1840) and Strümpel (1874) who reported this phenomenon mainly in themselves but not always in complementary colours to those of their dream images.

McKellar (1975, 1979b, p.105) points out two groups of phenomena in this state: hypnopompic speech and hypnopompic imagery. As an example of the former group he offers the case of a young woman who woke up to find herself murmuring "put the pink pyjamas in the salad", an utterance interestingly pointed out for its likeness to schizophrenic speech. When not expressed in overt speech, McKellar notes, hypnopompic thoughts are retained and expressed sub-vocally in this drowsy state. In the second group belong phenomena of an anticipatory character such as 'watching' oneself



getting up and beginning the events of the day but 'knowing' that one is still in bed (McKellar 1975, p.23; see also McKellar 1968, p.106). McKellar explains this character of the hypnopompic by ascribing to it "the function of protecting the sleeper from the harsh realities of getting up in the morning". It is doubtful, however, whether this feature is indeed protective since such anticipatory experiences just as often have the opposite effect of waking up the sleeper, as in the case of one of McKellar's subjects who, having dreamed of toasting bread, he "awoke quite quickly to smell toast burning" and got up to check whether the oven had been left on. O. Myers (1957, p.70) reported of a woman he once knew whose dream images would continue "for a short period after she awoke and had, for example, to pick her way through a mass of crabs on the carpet to the light to switch it on in order to reassure herself that they were not really there. On such occasions she would sometimes continue to see the images in the full light".

In contrast to the above, various workers (e.g., McNish 1830, p.82; Alexander 1909, p.633; Leaning 1925, p.356; Prince 1952, p.204; Kanner 1957; Green and McCreery 1975, p.70; James 1975, pp. 76-7) presented data which argue for a variety of hypnopompic experiences which are not continuations of dreams. Some of these experiences commence as the subject begins to wake up while others occur after he has awoken. McNish (1830, p.82) noted that one may awake and see visions of people in his room which he takes for real and thus resort to shouting and calling for help. Kanner (1957) proposed that children's nightmares transpire during such semi-waking states. On the other hand, many of these experiences are far from frightening. As one subject reported: "I have often, when waking in the middle of the night, found the room apparently blazing with light, heard loud music, generally of a band and seen a number of men and women, generally dancing or in rapid motion" (Leaning 1925, p.356). Another interesting example is one reported by McKellar (1957, p.153) in which an elderly woman woke up in the middle of the night to find her

darkened room "full of angels". On other occasions, "strange, symbolic figures" may appear "with explanations of their meaning" (Leaning 1925, p.356; see also Iamblichus 1895, pp.115-117).

An interesting case of linking dreaming with wakefulness in the hypnopompic, but hardly ever mentioned in the literature, is that of Descartes' (de Becker 1968, pp.97-99) who, having become aware of dreaming while asleep, began to interpret his dream and continued to do so after waking up and opening his eyes. Descartes also reported of frequently seeing "sparks scattered about the room" as he opened his eyes on coming out of sleep.

Fiss et al (1966), Lavie and Giona (1973) and Lavie (1974) carried out awakenings of subjects from various stages of sleep and found that there was a "carry over" effect from the particular sleep stage into the waking state. Interestingly, awakenings from the REM stage yielded more "dreamlike" responses than awakenings from other stages. Although this latter finding does not support in particular the view that hypnopompic experiences are always continuations of dreams it does, however, point out that they transpire in a climate of 'dreaminess'.

As with the hypnagogic kind hypnopompic experiences may involve any of the sense modalities: hypnopompic sounds and voices (hearing knocks on the door or one's name being called) are not at all unusual in this state (e.g., Lukianowicz 1959); smells (McKellar 1975, p.23) and haptic hallucinations are also reported (Lukianowicz 1959, p.327).

The occurrence of a prolonged hypnopompic state has been related by some investigators (e.g. Baillarger 1846, Maury 1848, Ellis 1897, de Manacéine 1897) to physical and mental pathology. De Manacéine makes reference to cases in the medical literature to the effect that "this half-waking state preceded the development of mental disease, of which it was, so to speak, the precursor" (ib., p.196), and that "it is not found in persons whose conscious cerebral activity is highly developed" (ib., p.196). Her own investigations revealed that a prolongation of the hypnopompic state (from 15 sec to 6 minutes; where it



occurred for longer than 6 minutes she considered it "wholly abnormal") tends to occur mostly in people whose work involves much exercise of the arms and feet (70%) and who are stout, phlegmatic, and plethoric individuals: it very rarely occurs in nervous and sanguine persons (ib., p.196).

De Manacéine made her observations on subjects who were "awakened only after two and a half or three hours of quiet sleep" (ib., p.205); each subject was tested ten times and each test per subject was spaced some days apart. The study was confined to observing people in the hypnopompic state defined as a state that "prevents them from gaining full consciousness, or from understanding where they are or what they have to do" (ib., p.195). Her results showed a significant difference in incidence with respect to sex (men 33%, women 20%). She remarked that these findings are not to be explained in terms of predominance of intellectuality, as this factor was controlled. She notes, however, that young women between the ages of 15-24 "present mostly a more marked predisposition to the half-awakening than men of the same age or than women of more advanced age" (ib., p.208). The incidence of age was found to be 10% in adults, 40% in 7-14 year-olds, 80% in 3-7 year olds. Working class subjects showed an incidence of 25% as opposed to 8% in artists, merchants, military men and others, and 2% in intellectuals. Children belonging to the working class displayed the longest hypnopompic state: between 5-6 minutes. The incidence in general was found to decrease between the ages of 25-40 and was again on the increase especially after 50.

De Manacéine was the first to draw attention to cultural factors as influencing the incidence of the hypnopompic state by noting that out of 84 of her subjects exhibiting this state in a pronounced degree 27 were Finlanders. She considered this "a national peculiarity" and went on to point out as a possible reason for this incidence "the fact that amongst the natives of Finland it is nearly impossible to find a person of sanguine temperament" (ib., p.204). De Manacéine also noted "a marked predisposition to a cataleptic condition of different

muscular groups" in people who presented a long and profound hypnompic state. Two of her subjects (sisters) who were "remarkably predisposed" to the hypnompic state since the ages of 7 and 8 developed chlorosis in their teens (ib., p.212).

Some of de Manacéine's findings were not confirmed by a recent study (Richardson et al 1981) which showed no significant difference in incidence between the sexes and a decrease in incidence in subjects in their 60s and 70s.

Hypnompic experiences are less commonly reported than hypnagogic ones: only 21% of McKellar's (1957) subjects reported it, and although the Owens (1963) and Richardson et al (1981) studies showed a much higher incidence - 51% and 64% - this is still lower than the hypnagogic reported in these studies, viz., 77% and 75% respectively.

Ellis (1897, p.284) protested against Myers' (1903) introduction of the term hypnompic into the literature and argued that it is "pedantic and unnecessary" to view the hypnagogic and hypnompic as two separate states. McKellar (1979b) pointed out that if a distinction is to be made between them this must be made on the grounds that the former experiences tend to "form themselves" as one wakes, while the latter variety, appearing as they do in the morning and being clear of perceptual experiences, they are the sort one tends to "come upon" already formed. As already pointed out in Chapter 1, no distinction will be drawn in this paper between 'hypnagogic' and 'hypnompic', although the use of the two terms will be maintained for the purpose of indicating the temporal occurrence of these experiences.

#### Speech phenomena:

Hypnagogic-hypnompic speech phenomena are generally apparently nonsensical or irrelevant statements or responses the subject makes as he falls asleep or wakes up. An example of the hypnompic kind has already been given



above, viz., "put the pink pyjamas in the salad" (McKellar 1979b, p.105). Another one, which I shall have occasion to refer to again later, is that reported by Mintz (1948) as having occurred to a Russian woman. In the process of waking up one morning the subject asked her husband to "set the towel on fire" (or "light the towel": the Russian admits of both meanings). Similar phenomena are also encountered on the hypnagogic end of the state. For instance, Maury (1957) reported that while drowsing during a lecture he responded to a question by the lecturer saying "There is no tobacco in this place". Hollingworth (1911, p.103) offers a number of examples of his own, e.g.: "(H's wife) Let's hurry and get there by ten o'clock. (H) That's easy. I could get there by a nickel to ten... [the time was 9.50]. (H's wife) How curious the moon looks behind the clouds! (H) Yes, just like a thin place in the sky". Other examples are reported by Oswald (1962).

## CHAPTER 5

### PHYSIOLOGICAL CORRELATES:

The subjective experiences of hypnagogia have been related by various investigators to the state of drowsiness both in terms of mental content and physiological and EEG activity (e.g. Hollingworth 1911, Davis et al 1938, Bertini et al 1964, Liberson and Liberson 1966, Foulkes and Vogel 1965). This is a specific application of the method of combining physiological measures with verbal reports to monitor correlates of physiological states (see Stoyva 1970 for the logic and advantages of this method); other areas that have received this attention more extensively include sleep, dreaming, meditation, and psi.

A second approach involving physiological correlates is that utilising information feedback to train subjects to reach a certain psychological state and remain in it for varying lengths of time (Kamiya 1962, 1968; Mulholland 1967; Hart 1968; Budzynski and Stoyva 1969; Kamiya and Nowlis 1970). Specifically in the hypnagogic area the method has been applied by e.g., Bertini et al (1964), B.B. Brown (1970), Green, Green and Walters (1970), Green and Green (1978), Budzynski (1972), Rechtschaffen (1973), Oliver (1976). This second approach constitutes biofeedback research which has already been discussed in Chapter 3. Here I shall concentrate on the former approach, that of combining physiological correlates to monitor hypnagogia.

Since hypnagogia is a state generally ascribed a position immediately preceding and following sleep, or even constituting part of sleep itself, I shall begin the examination of its physiological correlates with a brief introduction of the physiology and electroencephalography of sleep as a whole.

Following Berger's (1930) classic employment of non-polarizable electrodes to measure brain electric potentials, it has become a tradition in sleep research to use EEG recordings as indicators of the phases of sleep. In their pioneering work Loomis et al (1937) and Davis et al (1937,



1938) pointed out five successive stages of sleep which they designated with the letters A, B, C, D, E thus: A - alpha with interruptions; B - low voltage with alpha loss; C - appearance of 14 cps spindles and random delta; D - higher voltage of spindles and delta, with the latter becoming longer; E - increase of delta in voltage and wavelength with spindles becoming inconspicuous.

Dement and Kleitman (1957) simplified the above categorization by suggesting four stages: Stage 1 (descending), modified alpha moving to theta (7 cps), corresponding to late A and B in the Loomis et al (1937) study; Stage 2, lower voltage activity (3-6 cps) with 14 cps spindles, as in C above; Stage 3, delta (4 cps) with spindling; Stage 4, slower delta without spindling, corresponding to D and E. This pattern runs for about 90 minutes. The re-emergence of a modified stage 1 (ascending) has been linked with dreaming activity (dreaming appears also in the other stages but it is thought to be less dramatic and more thought-like). This 90 minute cycle (it ranges from 70 to 110 minutes) is repeated throughout the night, but, whereas at the beginning stages 3 and 4 are predominant, as the night progresses more time is spent in ascending stage 1 (up to an hour) and the other stages are represented mainly by stage 2. K-complexes, a term coined by the Loomis et al group to denote a short sharp diphasic change of potential (a negative wave followed by a positive one) which is superimposed on the background electrical activity of B and C (stages 2 and 3), often appear as a response to auditory stimuli (Davis et al 1939a, 1939b; Roth, Shaw and Green 1956) or internal autonomic events such as gastrointestinal contractions (Johnson and Karpan 1968). both spindles and K-complexes are linked with stages 2 and 3 of sleep.

Sleep is generally thought to consist of two types. The first, known variously as S (slow-wave), Q (quiet), or NREM (non-rapid eye movement) comprises stages 2, 3 and 4 (and, often, descending Stage 1). The second, A (active) or D (deep, desynchronized, dreaming) is represented solely by re-emerging or ascending Stage 1. The latter

is characterised by two groups of features: (a) phasic features, e.g., REMs (rapid eye movements), twitches, PIP (phasic integrated potential), brief contractions of the middle ear, and other, major, movements of the body (in the cat the PGO spike, an electrical potential recorded from the pons, lateral geniculate body, and occipital cortex, and commencing just before the appearance of REMs, is thought by many researchers to be "the primary phasic activity"), and (b) tonic (longer lasting) features such as muscle relaxation, penile erection or vaginal moistening. Usually the onset of D or REM sleep is heralded by a burst of theta waves whose intermittent presence throughout this stage, indeed, constitutes a main feature of the period. The theta waves of ascending stage 1 have a sawtooth appearance (Schwartz and Fischgold 1960) and frequently occur just before or during a REM (Berger et al 1962).

Several writers (e.g., Aserinsky and Kleitman 1955; Dement and Kleitman 1957; Berger 1961; Jacobson et al 1964; Snyder et al 1964; Broughton et al 1965; Fisher et al 1965; Williams and Cartwright 1969) have pointed out a number of physiological differences between what have come to be called REM and NREM types of sleep. These include the presence in REM sleep of hippocampal rhythmic theta activity, twitches and variability in blood pressure, heart rate and respiration. By contrast, in NREM sleep hippocampal electrical activity is variable, movements are few and gross, respiration is deep and regular, blood pressure is below waking level, and heart rate slow and regular.

The successive stages from wakefulness to REM sleep have been summarized by Freemon (1974) as follows:

Stage W: The EEG contains alpha activity associated with quiet wakefulness or low voltage activity with active wakefulness. The EMG has a high level of activity and there are frequent voluntary eye movements.

Stage 1: The EEG shows less than half the epoch occupied by alpha waves. No spindles or K-complexes occur in the EEG record. Occasional slow, rolling eye movements occur.

Stage 2: The EEG record shows K-complexes and



bursts of 12 to 15 cycles per second rhythm and contains less than 20 per cent delta activity. There are no eye movements.

Stage 3: The EEG contains between 20 and 50 per cent of the epoch occupied by delta activity. There are no eye movements.

Stage 4: The EEG contains over 50 per cent of the epoch occupied by delta activity. There may be spindle activity superimposed on the delta activity. There are no eye movements.

Stage REM: The EEG is relatively low voltage, mixed frequency activity with bursts of theta rhythm and saw-tooth waves. Conjugate rapid eye movements occur. The chin EMG reaches its lowest amplitude.

(Freemon 1974, p.10)

Davis et al (1938) were the first to note correlations between hypnagogic phenomena and sleep onset EEG rhythms. They extended the Loomis et al (1937) study by concentrating on subdivisions between A and B stages. They pointed out five electrophysiological subdivisions, with the fifth possibly belonging to "real sleep" or C stage in the Loomis et al (1937) classification. Davis et al (1938) remarked that subjects losing the EEG alpha rhythm during sleep onset reported dreamlike visions, phantasies, and feelings. Indeed, some of these visions, as one subject reported, were "practically dreams, but I am aware enough to catch them" (p.32). Similar remarks were made by Gastaut (1969) who divided the hypnagogic state into stage "1a1" (alpha rhythm) "1a2" (fragmented alpha), and "1b" (appearance of theta). Dement and Kleitman's (1957) subjects, also, reported dreamlike reveries as they were interrupted in descending stage one sleep : "In all cases", they noted, "the subjects felt that, although the mental content during the onset of sleep was often 'dream like', it was distinctly different from an actual dream. They invariably stated

that they were not asleep and that the mental imagery was not as organised or 'real' as that occurring in dreams. A variety of images and sensations were described that might be called hypnagogic, such as 'floating', 'drifting', 'flashing lights' etc."

The physiological changes occurring during the passage from wakefulness to sleep have been summarized by Kleitman (1967) as follows:

There is a fall in muscle tonus, as seen from the progressive diminution of muscle action potentials (Max 1935) and a decrease in the knee jerk (Lombard 1887). There is a slowing of the heart rate (Boas and Goldschmidt 1932; Pinotti and Tanfani 1940), a wavy plethysmographic curve (Suvorov 1954), occasionally a paradoxical increase in cardiac reflexes (Sokolov 1960). The insensible perspiration, as measured by the rate of weight loss, increases during the onset of sleep, paralleling the fall in rectal temperature (Day 1939, 1941).

(Kleitman 1967, p.74).

The sleep onset state (or states) is often referred to as a state of "low arousal". By this term, Stoyva (1973) explains,

we refer to a condition in which the major indicators of arousal are at reduced levels compared to when the individual is alert and active. Typically, muscle tension is reduced; autonomic activity such as heart rate and respiration are diminished; and cortical activity has shifted from low amplitude-fast activity to the slower brain wave frequencies characteristic of sleep onset.

(Stoyva 1973, p.388, note 2).

Sartre (1978, p.46: with reference to Gellé) describes the neuromuscular state of the organism during sleep onset in these words:

Muscle tone is in the main relaxed. Tonicity of attitude is almost completely suppressed. The tonicity of some muscles is, however, increased. For instance, the eyelids are not only shut, due to the relaxation of the retractor muscles, but the orbicular muscle must also contract. Likewise, if the large oblique muscles relax, the small oblique muscles contract, resulting in the divergence of the ocular axes; the pupillary orifice takes a position below the bony ceiling of the eye socket. And, finally, the pupillary contraction is likewise due to the contraction of the iris.

(Sartre 1978, p.46).



Sartre goes on to relate this neuromuscular state with the subject's introspective activities and changes in consciousness.

The relaxing of the retractor muscles and the large oblique muscles does not immediately follow the closing of the pupils. For a while we review the events of the day. The eyes remain convergent, the pupils are kept closed by the voluntary contraction of the orbicular muscles. Then our thoughts become more vague. At the same time the retractor muscles become distended. Now it takes effort to open the eyes. The large oblique muscles relax and the eyes roll in their orbits. At the least resumption of reflection the large oblique muscles contract and the eyes resume their position. Similarly, on hearing a noise I feel my eyes 'become fixed', that is, there probably occurs a double reflex of convergence and accommodation. The hypnagogic visions disappear immediately and so, it seems, do the phosphenes.

(Sartre 1978, p.46).

In respect to respiration, Bülow (1963, p.31) found that in the hypnagogic state "when the alpha activity in the EEG disappeared and theta waves developed, ventilation decreased"; similarly, the sporadic reappearance of alpha correlated with increased ventilation (see also Goldie and Green 1961). Timmons et al (1972) reported that

Respiratory movements of the abdomen and chest of human Ss were found to undergo progressive changes with loss of wakefulness. Abdominal-dominant breathing was associated with relaxed wakefulness, abdominal-thoracic equality with drowsiness, and thoracic-dominant breathing with sleep onset. During drowsiness, variations in amplitude of abdominal movements were closely related to vacillation between alpha and theta activity in the EEG.

(Timmons et al 1972, p.173).

Drowsiness being a condition preceding sleep is characterized by slow eye movements (SEMs) which, as Liberson and Liberson (1966) point out, "seem to be associated with a process preceding or initiating drowsiness and subsiding as soon as drowsiness reaches a certain level, 20 or more sec after its onset"; also irregularity of respiration during the first 20 sec of drowsiness is followed by recovery of this regularity (Liberson and Liberson 1966, pp.300-302). The state of drowsiness is here defined as "the onset of occipital alpha-blocking".

The Libersons noted that "there is a delay of several seconds for most subjects in subjective recognition of initial drowsiness". For instance, "only about 40% have a subjective recognition of drowsiness 10 sec after and about 50% recognise it 20 sec after the onset of alpha-blocking reaction" (ib., p.297). An earlier study by Blake, Gerard, & Kleitman (1939) had already pointed to the possibility that "muscle tonus diminishes very soon after the alpha pattern is lost, but the level of consciousness is lowered more slowly" (Kleitman 1967, p.57). Drowsiness, the Libersons (1966) noted, is a progressive affair, the subject slipping in and out of this state, staying in it for no more than 10 sec, and gradually remaining in it for increasingly longer periods as drowsiness becomes 'deeper'. It has also been noted that "the incidence of slow eye movements occurring a certain time before the onset of EEG drowsiness increases as the number of repeated drowsy periods increases" covering periods of interrupted EEG pattern of drowsiness thus suggesting "the presence of a residual state of drowsiness even though the electroencephalogram shows an alert pattern" (ib., p.299). Conversely, "when drowsy patterns start to invade the resting electroencephalogram... the subject may continue to be subjectively alert" (ib., p.301). This subjective component of alertness was graded by the Libersons on a four category scale ranging from reports of "here and now" characterized by the subject's concern about the experiment, to reports of "more vague types of thinking" such as "I was floating, drifting, dreaming" (ib., p.296). Reports on the "here and now" show a high incidence (53%) during alpha-activity declining rapidly during the first 10 sec after alpha-blocking and practically disappearing from the subjects' reports 15 sec after the onset of drowsiness (ib., p.298).

Electroencephalographically the progression is from occipital alpha-activity to alpha-blocking accompanied by a more anterior low-amplitude (4-7 cps) theta-activity that increases in amplitude leading to relatively high voltage vertex waves. As drowsiness deepens, theta-rhythm and vertex waves predominate. The appearance of 'spindles'



(12-14 cps) signals the onset of descending stage 2 of sleep. The subjective mental changes occurring through the appearance of these EEG patterns may, therefore, be related to them showing a progression from "here and now" reports (alpha-activity) to "vague and general thinking" (theta rhythm and vertex waves), the latter reports correlating with continuous patterns of drowsiness lasting for periods longer than 10 sec which, as a rule, do not occur for such lengths of time at the early stages of drowsiness. (This progression, however, is not always observed as there are people "who show an exaggerated amount of theta-activity preceding the onset of alpha-blocking" (ib., p.299), or have "delta-waves of sleep suddenly replacing alpha-activity" and other types of unusual sleep onset such as "occipital onset", "micro-sleep" (ib., p.300) and narcoleptic REM dreaming (Vogel 1960; Rechtschaffen et al 1963; Maron et al 1964; Globus 1966; Liddon 1967).

The Libersons' electroencephalographic progression was a confirmation of the earlier results of Foulkes and Vogel (1965) who found an increase in drowsiness with successive EEG/EOG stages. In their study Foulkes and Vogel took reports from nine young adult subjects from four categories of awakening "reflecting characteristic sequential changes in EEG and EOG variables" (ib., p.233), namely, Alpha EEG (continuous, with a few bursts of REM), Alpha EEG (discontinuous, with SEMs), Descending stage 1 EEG (mostly with SEMs), Descending stage 2 EEG (usually with SEMs). The results showed a steady decline in their subjects' volitional control and awareness of immediate environment and a steady rise in the frequency of hallucinatory experiences, the latter being defined by "a loss of the sense that one's experience is purely mental rather than actually transpiring out in the 'real' world" (ib., p.236). This increase in hallucinatory experience was shown to be concomittant with a decline of affect.

Most interestingly, dreams, defined as "hallucinated dramatic episodes", were also reported during Alpha EEG. Moreover, and contrary to earlier studies (e.g., Vihvelin 1948; Oswald 1962), it was found that in the majority

subjects did not only hallucinate dramatic episodes but also had the experience of actively participating in them (especially during descending stages 1 and 2) much the same way as they would in a nocturnal REM dream (see also McKellar 1957, p.41).

Another interesting finding in this study was the failure to demonstrate any consistent association of imagery modality with particular EEG/EOG or any consistent change in the presence of imagery in any modality with successive EEG/EOG stages, an indication of large individual differences in mental experience during the hypnagogic period (ib., p.235).

In regard to the hypnopompic state, an early investigation (de Manacéine 1897, pp.214-215) showed that the pulse during this state had "an evident tendency to become lower" and irregular. Respiration, too, was found to be "very irregular, showing acceleration and pauses". The faces of half-awakened persons, de Manacéine further noted, "had always a somewhat tumified look" especially around the eyelids. Later studies (Grollman 1930; Boas and Goldschmidt 1932) showed a definite acceleration of heart rate as the subjects awake in the morning. There is also an increase in the magnitude of the muscle potentials (Max 1937), tonic (de Lisi 1932), and respiratory activities (Fleisch 1929). Walter and Dovey (1944, p.64) also found that, as with the hypnagogic end, the hypnopompic is also characterized by the presence of 6-7 cps theta waves. Omwake (1932) found that subjects performed worse in the hypnopompic than during the hypnagogic phase. Kleitman (1967) noted that

Partial or even complete awakenings occur several times during the night and are not usually remembered; they become more frequent toward the end of the customary period of sleep; finally, because of increasing difficulty in lapsing back into sleep, they culminate in overt termination of sleep, or 'awakening' in the everyday meaning of this word.

(Kleitman 1967, p.127).



## CHAPTER 6

### PROBLEMS OF DEFINITION AND THE STAGES OF THE HYPNAGOGIC STATE:

Although some definite research has been done in establishing hypnagogic patterns and their temporal succession (e.g. Vihvelin 1948; Liberson and Liberson 1966; Foulkes and Vogel 1965; Vogel et al 1966; Foulkes et al 1966), no generally accepted temporal (beginning and ending) and psychological (quality of thought processes) limits have been offered. These difficulties clearly arise from the transitional character of hypnagogia (see also Alexander 1909; McKellar 1959; Rapaport 1967b) and the occurrence in it of cognitive modes and phenomena that are generally thought to be severally descriptive of - indeed, to characterize - other states of consciousness (e.g. daydreams, sleep dreams, psychoses, etc.: see Part Two).

Approaches to the problem of defining hypnagogia as a state of consciousness have concentrated mostly at differentiating it from, or relating it to, sleep (and dreaming) and wakefulness. There have been three main groups in this respect, two purely psychological and one concerned mainly with the physiological correlates of sleep onset. The latter was discussed in chapter 5.

Vihvelin (1948) separated the two psychological approaches into (a) the internal point of view represented by Burdach and Leroy, and (b) the external point of view represented by Weygandt, Schultz, and Jaspers. The former view argues that an analysis of the phenomenon itself should show whether it is a hypnagogic experience or sleep dream, the latter view uses as criterion the subject's state of consciousness.

Leroy (1933) described the hypnagogic state as a state in which imagery is devoid of the character of reality, of reminiscences, and of the quality of a creation of the imagination; and although images may appear sharp and exact they carry with them a quality of the fantastic than

the reproductive as far as their resemblance to a real object is concerned. More importantly, they differ from both real hallucinations and representations in that they do not prompt or involve their subject into actions: on the contrary, the subject's lack of any desire to act in relation to them is most characteristic. In this respect, and in contrast to nocturnal dreams, Leroy points out that the hypnagogist may be likened to an indifferent spectator at a play whereas the dreamer actively participates in his dreams.

In criticizing Leroy's criteria for distinguishing the hypnagogic state from the dream state, Schultz (1930) pointed out that there are types of hypnagogic visions "which fully imitate the dream-mechanism" traceable to nearly everybody and which would escape Leroy's definition. He, therefore, proposed that "hypnagogic hallucinations are such, for the most part optical phenomena, as appear before falling asleep, and where a more or less perfect control of another sense organ (e.g. the ear) must serve as a proof of the still continuing state of wakefulness".

Vihvelin (1948) objected to this criterion on the grounds that (a) "the continual perception of an accompanying noise interferes with the observation of the H.V. [hypnagogic vision], which is especially the case when one wants to perceive a hypnagogic audition", and (b) it is possible that "dream-phenomena will be able to obtrude themselves in fits of absence of short duration, as for instance, can be experienced during a railway-journey, when one is dreaming and yet may have permanent acoustic perceptions (the shaking of the carriage)," (p.361) . While Vihvelin does not accept Schultz's criterion as sufficient to ensure us against the error of mistaking dreams for hypnagogic experiences, he thinks it safer to apply Weygandt's criterion according to which "the border between the hypnagogic state and the dream is marked by the moment when the consciousness of the situation disappears", adding the following two stipulations to the latter: "firstly the subject must be able in the hypnagogic state to retain continually the consciousness of the situation and,



secondly, the ability to carry out voluntary movements must be kept intact continuously" (ib., p.361). Vihvelin further notes that there are two stages in the process of falling asleep: "(1) the stage of increasing fatigue, which is characterized by the quantitative reduction of the conscious psychic processes; (2) the proper hypnagogic state or hypnagogium, the beginning of which is characterized by qualitative changes in the conscious psychic processes" (ib., p.361). The end of the hypnagogic state is not sleep but a transitional state characterized by a vacillation between wakefulness and sleep "its chief distinctive mark being the interruption of the continuity of the state of wakefulness by constantly intruding dream-absences" (ib., p.362). The disappearance of the consciousness of situation marks the end of this transitional state and the beginning of the dream-consciousness. Thus Vihvelin anchors hypnagogia in the objective marks of the waking state (orientation, critical observation of phenomena, ability to make voluntary movements) emphatically pointing out that it is "a state of consciousness utterly different from the dream-consciousness" (ib., p.362).

However, Vihvelin's criteria for the use of the term 'hypnagogic state' are rather restrictive and not in line with evidence. On the theoretical side, he appears to ignore the common sense fact that the concept taken in its literal meaning stands for the whole transitional period preceding and leading into sleep; in which case Jaspers' definition of hypnagogia as the state embracing all those events "which appear in the period before falling asleep, from full wakefulness with closed eyes until the beginning of dreams" (quoted by Vihvelin 1948, p.360) would be more appropriate (I would argue: with closed or open eyes until the beginning of sleep). Vihvelin relegates the quantitative reduction of psychological processes to a pre-hypnagogic stage, and what he calls dream-absences and the vacillation of consciousness to a post-hypnagogic stage, thus cushioning the hypnagogic state 'proper' on the one side from full waking state psychological processes and on the other side from

dream consciousness. But, since he does not tell us explicitly what he means by "dream consciousness" (except for the mark of "the entire disappearance of the consciousness of situation") and in view of the reduction of quantitative psychological processes and the introduction of qualitative changes in psychological processes, the latter being very similar if not identical to those reported as operating during dreaming, it is very difficult to sustain the view that hypnagogic experiences and dreams are two distinct genera as opposed to their being different species of the same genus. Moreover, Vihvelin does not see the hypnagogic state as ending with the disappearance of the consciousness of situation (which mark, by the way, is not a sufficient condition, and in some cases, not even a necessary one, for the occurrence of dreams), but in an intermediate state of vacillation between wakefulness and sleep characterized by the intrusion of dream-absences.

But this is simply arbitrary: if one lies down to sleep and is neither fully awake nor fully asleep, surely he is then in the pre-sleep or sleep onset or hypnagogic state. A similar argument would be levelled against the pre-hypnagogic stage characterized by the quantitative reduction of psychic processes. In addition, Vihvelin's use of the term "increasing fatigue" in respect to the first stage is a misleading generalization. It is true that there are many reports of 'fatigue' at this stage but this cannot, by any means, be taken to characterize all the cases. And in most of those reports that it occurs it is doubtful whether it is properly employed to convey the notion of tiredness as opposed to that of a feeling of deep relaxation and unwillingness to 'come out of it'. Both Leroy (1933) and Sartre (1973), for instance, talk of a deepening state of self-induced paralysis and autosuggestion. This observation would argue both against the use of the term 'fatigue' and Vihvelin's positing in the hypnagogic state a subject's constantly retaining the ability to make voluntary movements.

As opposed to Vihvelin's pure hypnagogium numerous



reearchers have argued for a wider and more segmented hypnagogia. Indeed, it would appear that the concept hypnagogia or hypnagogic state can only be justifiably applied if it is understood to be covering a reasonably wide range of phenomena and cognitive features. Electroencephalographically, it ranges from intact alpha patterns, interrupted alpha, mixed alpha-theta patterns, theta, 14cps spindling and delta activity, to even beta (14-21cps) activity (Dement and Kleitman 1957, Foulkes and Vogel 1965) sprinkled in the more characteristic slow wave patterns. Experientially, the hypnagogic state is just as segmented ranging from slight dissociations and double-consciousness to complete dreams.

The first investigators to point to the hypnagogic state as consisting of stages were Arnold-Forster (1921) and Leaning (1925) who, on phenomenological grounds, suggested an early and a late hypnagogic stage. In chapter 5 we saw that Davis et al (1938), using EEG indicators, divided the hypnagogic state into five stages (the fifth stage, in fact, belonging to sleep proper). Liberson and Liberson (1966) attempted a four-stage classification. Gastaut (1969) offered a three-stage division pointing out that in the third stage instead of hypnagogic hallucinations sometimes there may be some dreaming (p.41). Under the term "twilight states", Stoyva (1973, p.388) included, in terms of EEG patterns, states which were mainly indexed by alpha rhythms, theta rhythms, and incipient Stage 2 "spindling" sleep. Vogel, Foulkes, and Trosman (1966), viewing the hypnagogic state in terms of ego functions, divided it into three progressive stages: the intact ego stage, the destructuralized, and restructuralized ego stage, or, as Trosman preferred, the early, middle, and late stages. Oliver (1976, pp.1-2), too, remarked that his own personal experience of the state showed that there are three stages: in the deepest stage he is unaware of his surroundings and his consciousness is filled with a dreamlike experience over which he has no control (this stage may, in fact, be subdivided into the stage in which he is totally unable to 'pull' himself

back, and that in which he still retains the ability to re-establish contact with his surroundings), in the middle stage he is still unaware of his surroundings and cannot make verbal reports although he can review his imaginal experience, in the lightest stage nearest to wakefulness he is aware of his surroundings and can report. Other workers who have pointed to hypnagogia as consisting of successive stages include Angyal (1927, 1930), Mayer-Gross (1929), Bizette (1931), Miyagi (1937), Critchley (1954, 1955), Linschoten (1956), Laird and Laird (1959).

It would transpire then that theoretical considerations and empirical evidence support the viewing of a segmented hypnagogic state as against Vihvelin's pure hypnagogium or proper hypnagogic state. Although it is clearly still too early to argue for very precise subdivisions, it would be more in line with evidence and better facilitate research if efforts were made to tentatively group correlated phenomena, states of consciousness, and physiological observations, into three stages and then test and modify these groupings in the light of new evidence.

In view of the fact that relaxation alone is sufficient not only to induce the hypnagogic state but also to lead straight into sleep (Coriat 1912; Kleitman 1923; Lovell and Morgan 1942) this dimension might be employed fruitfully in trying to define hypnagogia in terms of stages. Indeed, relaxation appears to be the factor against which, as a background, all hypnagogic experiences take place. Since the hypnagogic state as a whole is a continuum of increasing relaxation, its stages might be pegged against this continuum bearing in mind that the term relaxation comprises physiological and mental components. Hypnagogic experiences would thus be classified in terms of stage depending on how far, or deep, on the continuum these components lie when the experience takes place. The term 'relaxation' is also to be understood as the opposite of tension and 'activity' in respect to any or both of these components.

In a similar respect, Deikman (1971) distinguished between the "action mode" ("making it" happen) and



"receptive mode" ("letting it" happen) remarking that "the receptive mode is not a 'regressive' ignoring of the world, or a retreat from it - although it can be employed for that purpose - but is a different strategy for engaging the world in pursuit of a different goal" (ib., p.483). Oliver (1976, p.12) noted that "'letting it' happen is the single most important factor in attaining the kind of altered states of consciousness associated with theta EEG feedback and hypnagogic imagery". The employment of the "receptive mode" as an integral characteristic of hypnagogia for "engaging the world in pursuit of a different goal" is discussed later in this paper; here I shall address myself to the first part of Deikman's remark, namely, the retreat or withdrawal aspect of hypnagogia. This can be related in passing to the effects of sensory deprivation where the external physical component is prevented from engaging in any, or most, forms of activity with the environment. More instructively, the 'receptive' or 'non-striving' view of hypnagogia can be seen in the more general context of the conditions for hallucinatory activity proposed by West (1962, 1968) and Stoyva (1973).

West's (1962) "perceptual release theory of hallucinations" postulates that a hallucination appears when the following two conditions prevail: (a) impairment of effective sensory input, and (b) a level of arousal sufficient to permit awareness. Effective sensory input may be impaired in three ways: (i) absolute decrease or depatterning (e.g. sensory deprivation), (ii) input overload or "jamming the circuits" (e.g. high excitement), and (iii) decreased psychological contact with the environment through the unusual exercise of dissociative mechanisms. West's theory rests on the assumptions that experiences leave permanent neural traces and that the personality as "a dynamic field of force" exercises an integrating and organizing influence on these patterns. The organizing influence becomes impaired, for instance, when the sensory input is considerably reduced. As West (1968, p.268) argued, "when the usual information input level

no longer suffices completely to inhibit their emergence, the perceptual traces may be 'released' and re-experienced in familiar or new combinations". (West noted that the reduced sensory input as a predisposing condition to hallucination was shared by a number of altered states of consciousness such as Zen and Yoga meditation, hypnosis, hypnagogia, dreaming. Vihvelin (1948, p.374) makes reference to Lipps' proposing that every representation has a tendency to become a sensation but is inhibited; it can be disinhibited, however, by expectancy or suggestion or by affective stressing of the tendency).

Stoyva (1973, p.404), with stress on the induction of twilight states, adds three more postulates to those of West: (1) "In the production of hallucinatory experiences it is important to reduce not only external input but to reduce internal or proprioceptive input as well", (2) there must be a shift to a condition of 'passive volition', and (3) there must be a shift from sympathetic to parasympathetic predominance.

Now, it will be observed that not all of the above postulates are applicable to the whole of the hypnagogic state, and some of them are not applicable to any part of it. Stoyva's first postulate, for instance, is not necessary, although conducive, to the production of the hypnagogic state. Also, West's first postulate is only fully effective in the late hypnagogic stage when psychological contact with the environment may be totally lost. The problem here is that, hypnagogia being a transitional state, that is, being a state consisting of stages, it is difficult to argue for the application of all the postulates to all of the state. As we saw above Vihvelin argued for a hypnagogium in which a certain degree of waking consciousness was present, and his data were collected from hypnagogia no doubt, although not from a stage in which full hallucinations would be obtained - the case is even more obvious in the early stage of the hypnagogic state. It would appear that full hallucinations in the hypnagogic state are only obtainable during its late stage when parasympathetic predominance, "passive volition"



("receptive mode"), and a greatly decreased psychological contact with the environment are fully present, and that the experiences of the early and middle stages are "quasi-hallucinatory".

This indicates that those of the above postulates that are applicable to the hypnagogic state must be applied in a progressive manner - which is not different from saying that the hypnagogic state is characterized by an ever deepening continuum of physical and mental 'relaxation': as a person relaxes physically a shift to parasympathetic predominance takes place, and as he relaxes mentally he lets go ("passive volition" functioning) of his dynamic, mental effort attitude, i.e. his psychological contact with the environment decreases. Thus, relaxation, although in its deepest end it may lead to full hallucination, in its earlier stages it affords a range of interchanges between the "active mode" and the "receptive mode" which make the hypnagogic experiences so varied and interesting.

Bearing in mind the progressive nature of relaxation and the fact that it is made up of physical and mental components, we may attempt to identify hypnagogic experiences by stage. Thus, at the extreme end of total relaxation (late hypnagogic), we have full hallucinations (hypnagogic dreams characterized by ego involvement and loss of reality testing: withdrawal of psychological contact with the environment). In the mid-late hypnagogic stage, when the physical component is totally relaxed but a certain degree of mental 'activity' is present, "autosymbolic" phenomena make their appearance (there is a variety of them and they are discussed in chapter 7). In the early to middle hypnagogia, when the physical relaxation is considerable but mentally there is still an awareness of external reality, body schema distortions and floating or drifting are reported. Davis et al (1937) noted this experience in their subjects while they were in alpha EEG: the alpha rhythm was practically always (159 out of 165) interrupted by a depression (1.5 to 40secs) prior to the drifting or floating experience (see also Stoyva 1973, p.394, and Oliver 1976, pp.1-2). Lights,

spots, and flashes seem to belong to early hypnagogia (see also Leaning 1925 on this) and appear as the subject begins to relax.

A hypnagogic report recorded by Horowitz (1978) is very much to the point here as it shows clearly the hypnagogic progression:

Customarily as I drift off to sleep I find a succession of visual experiences. When I close my eyes I see darkness but then it lightens to gray. Next I see colored lights and sometimes very complex geometric forms that dance, rotate, or sparkle about. Soon a succession of images of people and scenes parade before me. I find these quite interesting and often go to sleep watching them. At times, however, I get vivid hallucinations which may frighten me awake. For instance, once all of a sudden I saw a spider on my pillow; another time a crab. They were ugly and scary and caused me to start up in bed thinking they were real.

(Horowitz 1978, pp.13-14)

Another phenomenological aspect of hypnagogia that can be related to progressive relaxation is the vividness and luminosity of the visions: these appear to become more vivid and colourful the more the subject relaxes (e.g. van Dusen 1972, p.100).



## CHAPTER 7

### COGNITIVE-AFFECTIVE CHARACTERISTICS:

In this chapter I shall delineate the salient psychological features of hypnagogia and attempt an analysis of the attentional state of the subject when involved in the induction and/or prolongation of hypnagogic imagery.

#### Suggestibility-receptivity:

Jastrow (cited by Arnold-Forster 1921, p.157) spoke of hypnagogia as "that state upon the verge of sleep in which the mind seems peculiarly open to suggestion". Hollingworth (1911, p.110) noted that it possesses "the tendency to magnify simply sensory impressions". Indeed, suggestibility appears to be one of the most prevalent, if not the most prevalent, features of hypnagogia. This is to be understood not only as the subject's susceptibility to accept suggestions by an external agency, e.g. an experimenter, but also as the subject's readiness to accept, incorporate and elaborate perceptual (both exteroceptive and proprioceptive) and imaginal data as well as 'freely' associate and elaborate concepts and ideas, that is, as the subject's auto-suggestibility (Alexander 1909; Hollingworth 1911; Varendonck 1921; Leaning 1925; Sartre 1978).

De Manacéine (1897) carried out experiments with subjects in the hypnopompic state by waking them up after two or three hours of night sleep and making various suggestions to them while still in this half-awakened state. Her results showed that (a) "all ideas and emotions of a depressive character can be suggested much more easily than ideas or emotions of an exciting type" (ib., p.200), that (b) intellectual suggestions were considerably less successful than emotional ones, and that (c) children were more susceptible to suggestions than adults. (In 15-year-olds intellectual suggestions were successful in 25% of the cases and emotional ones in 45%. In subjects

under the age of 15 the responses were 85% and 97% respectively). Emotional suggestions included fear, anger, anxiety, and sorrow. The intellectual ones consisted of suggesting false judgements and opinions of the form "does not three times two make five?". In the 'intellectual suggestions' group experiments were not counted as successful when the subject merely mechanically repeated the last two words of the suggestion ("echo" phenomenon) but only when the answer was clearly in the affirmative (e.g. "Certainly three times two make five"). Sometimes the subjects did not wake up fully after their hypnopompic state but instead went back to sleep. De Manacéine reported 35 such cases 10 of which did not remember anything when they woke up in the morning either about the suggestion or their reaction to it. However, in 17 cases (68%) the subjects remembered the suggestions but these were transformed or incorporated into a dream e.g. when snowing during a hot summer day was suggested they dreamt of such an event. In some cases there was dream elaboration based on the suggested happening, and "in all cases the recollection that remained of the suggestion contained always an emotive element" (ib., p.210), namely, the emotion suggested during the hypnopompic state, "and even when they remembered an intellectual suggestion they remembered it always on the emotive side", such as the sense of wonder they felt at seeing snow during a summer's day. At the suggestion of an emotion such as fright the subject's pulse slowed down, and sometimes stopped momentarily, accelerating immediately afterwards. As Schacter (1976) rightly points out, however, in this study no baseline measures were taken nor was detailed information given regarding the experimental conditions.

Later researchers (e.g. Hollingworth 1911; Varendonck 1921) noted the readiness with which external stimuli tend to become incorporated in hypnagogic mentation and drew attention to the possibility of external stimuli being causally involved in the genesis of hypnagogic experiences. Rosett (1939) and Barber (1957) both suggested that



hypnagogia is a state in which subjects are especially susceptible to suggestions. Davis et al (1939) were the first to observe through EEG an increase of responsiveness to sound as the subject moved from wakefulness to drowsiness. More recent research (Williams et al 1962; Weitzman and Kremen 1965; Ornitz et al 1967; Fruhstorfer and Bergström 1969; Fruhstorfer et al 1971) confirmed Davis et al's findings. Ornitz et al (1967) found that averaged evoked responses (AERs) to 60db clicks (ambient noise 30db) clustered in their largest amplitudes around sleep onset, viz. during the 10 minute period immediately preceding and following the first sleep spindle, that is, during the later hypnagogic state. These investigators conclude that "there would seem to be either a special facilitatory influence or a decrease in inhibitory influence associated with the transition from wakefulness to sleep" (ib., p.340), and point to other supporting evidence provided by de Lisi (1932) and Oswald (1959c) in respect to the occurrence of sudden bodily jerks at sleep onset as indicators of facilitation or decrease in inhibition. (Ornitz et al also noted that the change in AER amplitude "seems to carry over into the first hour of sleep and gradually wanes by the second hour" leading to no habituation).

Ornitz et al's (1967) findings are a confirmation of Arnold-Forster's (1921, p.161 et seq.) observations that "when we are nearest to sleep the senses become abnormally acute". This latter author also wrote of the "special receptiveness of the mind to suggestion and communication in the borderland state" (p.157), and referred to other workers who made similar remarks, e.g. McDowell who wrote that "the impressions that are introduced at such a time tend to operate with abnormally great effect because they work in a free field, unchecked by rival ideas and tendencies" (quoted by Arnold-Forster 1921, p.159). Reference to the sensitivity and receptivity of the hypnagogic state has also been made by, among others, Taine (1857, p.42), Trömmner (1911), Leroy (1933, p.1), Critchley (1955).

Budzynski (1977, p.39) claims that in the hypnagogic state subjects "are supersuggestible and capable of learning certain things more efficiently and painlessly than during the day, when logical and analytical faculties are in control". He reports that by means of an electromyograph (EMG) subjects are trained to reduce tension in forehead muscles through biofeedback and thus decrease cortical and autonomic arousal as well. Once they have learned to put themselves in this relaxed state characterized by theta EEG activity, they are further "trained to maintain the theta pattern indefinitely with a device called Twilight Learner" (ib., p.41). Budzynski argues that because in this state the constricting influence of logical thinking is relaxed or absent, subjects can be helped to break down mental blocks, prejudices, biases, resistances, bad habits, headaches, anxieties, and learn new material, such as languages, easier and quicker. He offers as evidence some of his own work and his colleagues' and cites other instances from eastern Europe, in particular the Russian tutorial method known as "hypnopedia" which uses repetition of material over several days or weeks. One important factor in hypnopedia is the subject's mental set or expectancy, viz. the subject is told while awake that he will absorb the material put out to him during sleep. Evidence from this quarter suggests that learning is better facilitated in the lighter stages of sleep. Budzynski also makes reference in this respect to Lozanov's "suggestopedic" method which entails relaxing and listening to classical music while ignoring verbal information conveyed by an instructor who modulates her voice according to the tempo of the music. It is claimed by Lozanov that suggestopedic learning is more intuitive and holistic and that information is retained longer than when received under alert conditions (ib., p.42).

Budzynski makes the interesting observation that the same kind of mentation encountered during a very low arousal state, e.g. in hypnagogia, is also to be met with at the other end of the arousal scale, e.g. during excitement or fright (see also West 1962, on "jamming the



circuits"). Budzynski's observation is in reference to hemispheric lateralization. His claim is that when the organism is either in very high or very low arousal level "the dominant hemisphere stops functioning effectively" and the non-dominant takes over. However, it is highly debatable whether during great excitement such as that brought about by anger or fright either of the two cerebral hemispheres is functioning properly. Strong emotions are more linked with the lower brain and limbic system than with either of the cerebral hemispheres. Moreover, strong emotions like anger and fear are known to be associated with sympathetic arousal whereas in a low arousal state there is parasympathetic predominance: it is very difficult, to say the least, to see how these two generally opposite systems can serve the same area of the brain in two extremely different physiological conditions. As Koestler (1981) rightly remarked, the two systems are linked with quite different emotions and range of awareness: the sympathetic is characterized by emotions such as anger and fear that restrict awareness, whereas the parasympathetic is linked with more subtle emotions such as contemplation, wonder, religious and esthetic experiences which carry a wider range of awareness (see chapter 17 for more detailed arguments). However, Budzynski's findings supported the hypothesis put forward by earlier writers (e.g. Simon and Emmons 1955, 1956; Rubin 1968) that the drowsy state is the most effective period for 'sleep' learning.

#### Accompanying awareness of significance:

A rather important feature of hypnagogia, and one which is often overlooked, is the accompanying awareness of significance which seems to equip the subject with an understanding of his imagery, i.e. an understanding of its symbolism. Its occurrence in hypnagogia may be a congruent accompaniment of creativity (e.g. Kekulé: Japp 1898), have mystical overtones (e.g. van Dusen 1972), or be clearly psychotic (e.g. Hollingworth 1911). Although

the phenomenon is reported by Vihvelin (1948) as a feature of a particular type of hypnagogic vision (and as a more frequent feature of nocturnal dreams), careful examination of reports in the literature shows it to be a more commonly occurring feature of hypnagogia in general. It is not reported very often in spontaneous cases, i.e. when it is not expected to appear. It is, however, a defining characteristic of the "autosymbolic" phenomenon first reported by Silberer (1965; first published in German 1909) and subsequently by Alexander (1909), Hollingworth (1911), Slight (1924), Leroy (1933), Kollaritz (1934, cited in Vihvelin 1948), Vihvelin (1948), Rapaport (1967a), van Dusen (1972, 1975). My own observations suggest that its appearance and the particular form it takes depend on the mental set of the subject both prior to and during hypnagogia itself.

Silberer (1965) observed that when the following two conditions were present: (a) drowsiness, and (b) an effort to think, an autosymbolic phenomenon made its appearance, that is, "an hallucinatory experience which puts forth 'autosymbolically', as it were, an adequate symbol for what is thought (or felt) at a given instant" (ib., p.196). All autosymbolic hypnagogic phenomena, according to Silberer, are the result of the above-mentioned two conditions, the former being a passive condition not subject to will, the latter an active one manipulatable by the will, and "it is the struggle of these two antagonistic elements that elicits...the 'autosymbolic phenomenon". Foulkes and Vogel (1965), who specifically pointed out the absence of this phenomenon in the reports of their subjects, conceded that they "did not obtain the second of the two conditions which Silberer felt necessary for its occurrence" (p.242), that is, "an effort to think".

Speaking from a psychoanalytic perspective Silberer considers the phenomenon "regressive". He distinguishes three types of the phenomenon pointing out that often a hypnagogic experience may be a mixture of two or all three. The first type, which he calls "Material (content) phenomenon", consists of "autosymbolic representations of



thought contents, that is, of content dealt with in a thought process", such as ideas, groups of ideas, and judgements. For instance,

In a state of drowsiness I contemplate an abstract topic such as the nature of transsubjectively (for all people) valid judgements... The content of my thought presents itself to me immediately in the form of a perceptual (for an instant apparently real) picture: I see a big circle (or transparent sphere) in the air with people around it whose heads reach into the circle... In the next instant I realise that it is a dream-picture; the thought that gave rise to it, which I had forgotten for a moment, now comes back and I recognize the experience as an 'autosymbolic' phenomenon.

(Silberer 1965, p.198)

Another example offered by Silberer is the following:

"My thought is: I am to improve a halting passage in an essay. Symbol: I see myself planing a piece of wood" (ib., p.202).

The second type of autosymbolic phenomenon, which Silberer calls "Functional (effort) phenomenon", represents the condition of the subject experiencing the phenomenon or the effectiveness of his consciousness, that is, it has to do with the mode of functioning of the subject's consciousness and not with the content of his thought.

Example:

I am thinking about something. Pursuing a subsidiary consideration, I depart from my original theme. When I attempt to return to it, an autosymbolic phenomenon occurs. Symbol: I am out mountain climbing. The mountains near me conceal the farther ones from which I came and to which I want to return.

(Silberer 1965, p.204)

The third type he calls "Somatic phenomenon" and it reflects "somatic conditions of any kind: external or internal sensations, such as pressure, tension, temperature, external pain and position sensations,...", chemical, optical, and other stimulations (ib., p.200-201). Thus the somatic phenomenon may arise from various physiological sources, such as pressure of a blanket, itching, rheumatic pains, palpitations, smells, apnoea, a breeze

touching one's cheek, and so on. For instance: "I take a deep breath, my chest expands. Symbol: With the help of someone, I lift a table high". Another example:

My blanket rests so heavily on one of my toes that it makes me nervous. Symbol: The top of a decorated canopied carriage scrapes against the branches of trees. A lady hits her hat against the top of her compartment. Symbol-source: I had attended a flower parade that day. The high decorations of the carriage often reached to the branches of the trees.

(Silberer 1965, p.206)

The "somatic phenomena" are somewhat different from the other two kinds in that the "effort to think" is not relevant in their genesis, and "in the struggle against drowsiness the 'will' is replaced by sensations or feelings": all that is needed for the production of these latter phenomena is that one should resist falling asleep when very drowsy ("interference with falling asleep"), but at the same time must not force oneself into full wakefulness. Silberer noted that the material for the symbols in these phenomena is taken (as in the example of the flower parade above) mostly from recent experiences. It should be noted, for later reference, that in all three kinds of autosymbolic phenomena the interpretation of the symbol is given during the phenomenon itself, that is, Silberer knows what the imagery conveys to him either while having the experience or as the imagery fades away but he is still in the hypnagogic state.

Kollaritz (1934, cited by Vihvelin 1948, pp.376-77) reports a hypnagogic experience which is identical to Silberer's "material phenomenon" in respect to the condition of its appearance, the rising symbolism, and the accompanying interpretation of this symbolism. Kollaritz recounts how in the drowsy state he tried to find a connection between cyclophrenia and schizophrenia and how, as he grew sleepier and sleepier, "the thinking process ceased entirely" and visual imagery appeared in the form of a system of co-ordinates along which "two small freight waggons were running", one from left to right on the sinus-line and the other from top to bottom along the tangent-line.



The waggons had no label whatever, Kollaritz reports, "but I know that the first one corresponded to manic-depressive psychosis, the second (along the tangent-line) to schizophrenia, and that their movements ahead meant the course of both these diseases".

Vihvelin (1948) presents a number of reports of his subjects in which there is clearly an accompanying awareness of the significance of the symbolism in the vision. For instance: "A vision of one's empty shoes appears, seen from above. According to the accompanying awareness, this is to signify that one must put them on and go out. - Connection: shortly before the mental content was present that one will have to go out soon" (ib., p.377). Slight (1924, pp.276-7) reports that if, while in the hypnagogic state, some problem presents its solution or a memory is recovered after some effort, he may have the image of a bridge over which he seems to have crossed and looks back feeling that he has crossed after difficulty but he is relieved by the fact that the crossing is completed. Leroy (1933, pp.44-47) offers a number of autosymbolic phenomena that include personal experiences and reports by subjects. Rapaport (1967a), reporting on his attempt to remain awake during the hypnagogic state, describes the sudden emergence of the image of two waves which he was trying to bring together and of the vision of someone who was frantically trying to get to a door which was slowly closing. A remark by Maury (1878, p.451) suggests that he, too, was probably aware of this phenomenon. He writes: "As soon as the mind stops on an idea, a corresponding hypnagogic hallucination produces itself, if the eyes close". Importantly, Maury's observation points out the possibility of having autosymbolic experiences, which are not "somatic phenomena", in the absence of a struggle between trying to think and the desire to fall asleep. This, will be argued later, may point to the hypnagogic state's having its own 'cognitive function' which is distinct from that of the waking, logical, thinking.

Two of my own hypnagogic experiences may be included

here. The first belongs to the "material phenomenon" type whereas the second is mainly "functional" but with an added 'intuition' to it: Lying in bed with eyes shut half-asleep. I am thinking of the difficulties of being fully awake in the hypnagogic state. I have the picture of a man (I feel, myself) rolling around a stone bigger than myself up a small conically shaped hill trying to place it on its tip. The idea behind it is that if I manage to do it I will then be able to have a clear view all round. But every time I roll the big round stone to the top I only manage to get a glimpse of the surroundings before the stone begins to roll over to another side of the cone. It never exactly rolls off my hands completely, but I have to go along with it until I manage to stop it rolling away and then start all over again this time from another side of the cone. In fact, I never manage to get it to the tip but sort of get to just below it and then keep going round the tip trying to stop it from rolling away. As I reflect on this imagery while the experience is coming to its end I realize that the whole vision is a representation in picture-form of my thoughts about the difficulties of maintaining waking awareness during hypnagogia. The second experience began with my thinking about a particular weakness in my behaviour and how I could best conceal it. Suddenly, I had the hypnagogic vision of myself squatting on the ground in front of a hole (about 6" x 6") which I was trying to fill up with earth. As I was doing that I realised that in order to fill up the hole I was, in fact, making another hole next to it as I dug to get the earth I needed to fill up the first hole. Then I sort of had a flash of understanding in which I realized that there was no way of really covering up any weakness and that no matter how I glossed over it the fact remained that I myself knew about it.

An interesting observation made by Silberer (1965) and emphasized by Slight (1924) is that symbols appearing in hypnagogia carry specific meanings for the individual concerned, that is, they are not static universal symbols



but particular and specific ones. For instance, on one occasion Silberer is considering how one of the characters in a scene of a play he is writing should act. He becomes drowsy as he thinks about this problem and experiences the following:

I am peeling an apple. The arrival of this symbol interests me and wakes me up. I am thinking of the apple and cannot explain its significance. So I try to pick up my original trend of thought - concerning the scene. Lo and behold, I continue peeling where I left off. The meaning of this peeling suddenly becomes clear. To understand it one must know the symbol-basis. In peeling apples I sometimes try to get the peel off in one continuous, not spiral but rather serpentine, strip. I succeed only if I don't lose the connection at the curvature. In this instance there was a curvature between the first and the second step of peeling (as the changed position of the apple in my hand clearly showed). The symbol thus represents my effort to secure a connecting link which threatens to break.

(Silberer 1965, p.205)

This subjectivity of symbolism was more explicitly pointed out by Slight (1924, p.281) who argued that "so-called symbols are not hard and fast structures - they are dependent for their formation on the thought processes of the present and thus a candle may be a phallic symbol in one dream whereas it is a candle and nothing else in another". A good example to illustrate this argument would be the well known case of Kekulé's hypnagogic vision of snakes biting their own tail, which was not interpreted according to any predetermined system of symbol interpretation, e.g. as a sexual symbol, but according to the accompanying awareness of its significance - which spelled to Kekulé the solution of the benzene molecule puzzle.

Slight made another important observation which has gone practically unnoticed, namely, that hypnagogia is the most appropriate state in which to carry out interpretation of symbols, as opposed to the psychoanalytic approach where the interpretation takes place when one is fully awake and "an image is detached from the dream, called a symbol, and associations are secured to interpret it on

much the same principle as we look up a dictionary to find the equivalent of a foreign word in the English language - that is as if the symbol and the real object were equal" (ib., p.280). He points out that when interpretations are made while the person is either still experiencing the hypnagogic imagery or, in any case, still in hypnagogia (see Silberer's example with the peeling of the apple),

the critical faculties are largely in abeyance, the thought processes are still of the nature of undirected thinking, as in the dream itself, and the dream thoughts are detailed and without elaboration or other alteration. In addition, the dream thoughts are still as it were echoing in the mind and the affective state is unaltered, so that the whole subjective state is the same or practically the same as that which exists during the dream - which state can never again be fully achieved. The interpretation obtained has that note of reality and surety which a true and real self-knowledge alone can give.

(Slight 1924, p.280)

Moreover, what makes the symbols what they are is not only, or always, the significance they normally have for the individual (as in the case of Silberer's apple-peeling) but often the significance they have or acquire at the time of their appearance or very soon after while the person is still in hypnagogia.

However, as pointed out earlier, awareness of the significance of the symbolism is not always present, and in the majority of cases imagery remains a puzzle until one begins to pay attention to it and enters into a form of 'conversation' with it by means of gently prodding it with questions about its meaning. The difficulty here lies in the degree of willingness on the part of the subject to enter into this form of 'associating' or 'talking to oneself'. As Jung (1953-79, vol.9, part 1, p.132) pointed out in respect to allowing one's unconscious to emerge, this "becomes possible only when the ego acknowledges the existence of a partner to the discussion". Furthermore, as van Dusen (1972, p.99) notes, the process of balancing oneself between waking and sleeping and learning to maintain that balance requires the ability "to relax enough to continue to observe the hypnagogic without



blocking it by an excess of ego. Very clearly it is the antithesis of ego. Where ego is absent, it can appear". When this happens the autosymbolic nature of hypnagogia becomes obvious. "When one first runs into the hypnogogic", van Dusen further notes, "it seems to be just a lot of random firings of the brain, bits of images and phrases... Upon closer examination it appears rather clearly autosymbolic" (ib., pp.100-101). This autosymbolic feature may stretch all the way from the eigenlicht to the deepest layers of hypnagogia. The seeing of geometric patterns, for instance, may represent the analytical mind of the subject. "My own fern-leaf designs", van Dusen remarks, "seem to go with a very peaceful languid state, the feeling suggested by ferns growing in shaded areas" (ib., p.97). The same applies to the phenomena of the auditory modality: peculiar combinations of sounds or strange names may also be autosymbolic. "At the moment the name explodes in awareness", van Dusen further notes, "it seems to represent the background feelings it came from by the arrangement of its sound qualities" (ib., p.102). Towards the other end of hypnagogia, the 'conversation' method may elicit more meaningful responses. For instance: "I once asked the hypnogogic whether or not I should change jobs and circumstances... I saw a river that had worn down through a gorge for centuries and heard 'Wear down like a river'. I came out of it with a feeling of the great pleasure of knowing one place for centuries" (ib., p.103).

Van Dusen suggests that hypnagogia may consist of a hierarchy of levels roughly as follows:

- (a) random bits of images and phrases;
- (b) experiences that are pretty clearly autosymbolic or representative of one's state at the moment;
- (c) hypnogogic experiences that are instructive, including the possibility of questioning the process and learning from it;
- (d) hypnogogic experiences that break into trance-like periods of enlightenment.

(van Dusen 1972, p.105)

In the depths of hypnagogia, van Dusen notes, the questioner and the answerer become one in a kind of satori or

enlightenment.

The 'asking' technique seems to have also been used by Kubie (1943, p.176) in his use of hypnagogia in "the recovery of repressed amnesic data". His patient was encouraged, while in the hypnagogic state, to ask "What is the matter with me?" as the starting point of his thoughts. This resulted, Kubie reports, in the emergence of "vivid images of himself as a child".

One phenomenon in this state, van Dusen reports, which does not appear to have been noticed by anyone before is the following:

when nearly asleep I find myself locked into some kind of logical relationship. There may be a fixed image and I go over the logic within its form repeatedly. I have the impression it is like a perfectly balanced, very complex, logical presentation. When I awaken it is difficult to remember though. I may come out with some very paradoxical statement. When, within it, all its logical relationships seem perfectly clear although complex and often paradoxical.

(van Dusen 1972, p.98)

Van Dusen attempts to explain this phenomenon as perhaps having to do with his personal desire to see things in the world fit each other in a perfect comprehensive whole. However, the same or very similar phenomenon was noted by Hollingworth (1911, p.103) who reported that he frequently recorded fantastic experiments and conclusions late at night which at the time of their conception "seemed highly rational, strikingly original and wonderfully significant".

More specifically, Hollingworth (1911) noted that in hypnagogia "an idea, plan or desire is...able to make unimpeded progress from stage to stage of its development with what seems at the time to be unerring logic" (p.109), and that this state "behaves much as do the familiar dream states in which cosmic riddles are solved and impossible mechanical devices evolved... When a chain of reasoning it involved, all projects are fertile and all outcomes expansive" (p.110).

Hollingworth (1911, pp.106-7) uses the term "substitution" to describe phenomena encompassing synaesthetic, autosymbolic, and 'transformational' events. He appears



to consider synaesthetic and autosymbolic phenomena as paraphrastic, that is, as reverberations or re-statements in a sensory modality of thoughts or perceptual and imagined experiences taking place in another sensory modality. Under the term "sensory substitution" he describes what I would call transformational and incorporative phenomena, such as those that occurred in his first example in which the sound of the waves washing against the sides of the boat in which he was travelling assumed the role of a foreign salesman, and those that occurred in his third example in which his tossings and turnings in bed became transformed into the combination numbers of his gym locker.

Relevant in the present discussion are Leaning's (1925) remarks in connection with the aesthetic quality of hypnagogic visions, and in particular of faces which range from "transcendent beauty" to "hideous and terrifying". Leaning's (1925, p.316) explanation of the quality of these visions is that they might have "some relation to the thought-tone of the persons seeing them, and may be a transcription in symbol of the unconscious morality and instinctive emotional reaction to life which lies under the surface of the conscious and the controlled". Interestingly, however, several investigators (e.g. Galton 1883; Alexander 1909; Leroy 1933; Vihvelin 1948; Foulkes and Vogel 1965; Sartre 1978) noted that visual hypnagogic experiences are generally accompanied by lack, or considerable decrease, of affect irrespective of their content or aesthetic quality. Indeed, Foulkes and Vogel (1965) pointed out that "emotional flatness is the primary affective characteristic of the hypnagogic period" and that "even in the minority of hypnagogic reports which do contain indications of the presence of affect it is quite rare for this affect to be at all intense" (ib., p.235). On the other hand, Hollingworth (1911), Leaning (1925) and McKellar (1969a) argued for a variety of emotions occurring in hypnagogia. However, careful examination of reports shows that not only are strong emotions rare in this state but also that their occurrence is not conducive

either to the induction or the prolongation of hypnagogia. For instance, hypnagogic nightmares in normal subjects bring the state to an end. Similarly, strong emotions would prevent hypnagogia from occurring naturally in the first place. These observations are in accord with my arguments and suggestions in chapter 6 in connection with psychophysical relaxation being a continuum leading from wakefulness into an ever deepening hypnagogia. As distinct from strong emotions, most reports speak of a "relaxed numbness", "curiosity", "interest" or even sheer "disinterestedness" as accompaniments of hypnagogic visions.

#### Regressivity:

Nearly all workers in this area have pointed out the 'regressive' character of hypnagogia. Silberer (1965), for instance, analysing one of his hypnagogic experiences, wrote:

My abstract chain of thought was hampered; I was too tired to go on thinking in that form; the perceptual picture emerged as an 'easier' form of thought. It afforded an appreciable relief, comparable to the one experienced when sitting down after a strenuous walk. It appears to follow — as a corollary — that such 'picture thinking' requires less effort than the usual kind.

(Silberer 1965, p.198)

In agreement with Freud (1900) he argued that "this is in many respects a primitive form of thinking". As McKellar (1957, p.45) points out this view is highly compatible with the theory later developed by Rivers (1923) according to which dreaming is "an expression of early modes of mental functioning which have been allowed to come into action owing to the removal of higher restraining influences derived from the experience of later life". It is also compatible with Bergson's (1901, 1902) theory of "mental effort" in respect to perception, and Jung's (1944) distinguishing between "directed thinking" and "dream or phantasy thinking". According to Jung, the former type of thinking is "troublesome and exhausting" whereas the latter "does not tire us; it quickly leads us away from



reality into phantasies". James referred to the latter as "merely associative" thinking and wrote:

Our thought consists for the great part of a series of images, one of which produces the other; a sort of passive dream state of which the higher animals are also capable. This sort of thinking leads, nevertheless, to reasonable conclusions of a practical as well as a theoretical nature. As a rule, the links of this sort of irresponsible thinking, which are accidentally bound together, are empirically concrete things, not abstractions.

(cited by Jung, 1944. p.11)

McKellar (1957) refers to hypnagogic mentation as "autistic" (Bleuler 1950), that is, thinking dominated by inner fantasy life. Similarly, Oswald (1962) uses the term "derealistic", also introduced by Bleuler (1924) to convey the disregard of, or divorce from, reality apparent in this kind of mentation. These two Bleulerian terms are very similar to Piaget's (1951) "egocentric" employed in the description of mentation encountered in early childhood, dreams, and half-sleep states.

Like the above workers, Rapaport (1967a) also noted that as he slipped into the hypnagogic state he began to lose reflective self-consciousness together with the ability to exert effort and think logically while at the same time his visual imagery increased in frequency and vividness. Similarly, Singer (1966, p.41) found that effortful thinking was difficult to carry out in hypnagogia and that "reminiscing proved to be the easiest task". It is also relevant to note that thinking in images, which dominates hypnagogic mentation, is thought to appear in the earliest stages of the cognitive development of children (Werner 1948; Werner and Kaplan 1967). It is significant in this connection to note Hollingworth's (1911) remark that "in this state [i.e. hypnagogia] the condition of early childhood is reproduced" (p.106), typified by examples of magic-childlike thinking (p.102).

The change of the quality of thought in hypnagogia has been noted by various other investigators (e.g. Maury 1878; Leroy 1933; Archer 1935; Froeschels 1946, 1949; Mintz 1948; Vihvelin 1948; Critchley 1955; Foulkes and Vogel 1965; van Dusen 1972; Vogel et al 1972; Stoyva 1973). Mayer-

Gross (quoted by Vihvelin 1948, p.375) remarked that "the mental processes in this state of complete passivity are... radically different in nature from the directed thinking of the waking state". Similarly, Proust (quoted by Critchley 1955, pp.102-3) noted that in hypnagogia there is a "form of reasoning totally contradicting the laws of logic and the evidence of the present". Forbes (1949, p.160) observed that in this state "one may simultaneously visualize a familiar landmark and recall a recent 'wise-crack' and perhaps some third impression". Often, items of experience, which clearly belong to different and unrelated frames of reference, may fuse to give rise to novel, if strange, combinations.

Hollingworth (1911, p.109) remarked that here "the essential thing is the release of all intellectual inhibition" and that "formal, practical and conceptual constraints being removed, resemblances of a sensory and ordinarily unnoticed kind...become predominant" (p.108). He noted the following as typical occurrences in hypnagogia: unusual verbal combinations, absurd juxtapositions, bizarre analogies, attention to irrelevant details, naive confusion of related concepts. The last of these was stressed by Froeschels (1949, p.24) who pointed out that similarity between two or more items may turn into sameness or identity (see chapters on 'Schizophrenia' and 'Creativity').

Leroy (1933, pp.42-43) cited a case in which both the element of suggestibility and the tendency to turn similarity into sameness were clearly present. His subject reported that at first he saw the image of a carpet being shaken from a window. As he watched this it seemed to him that the carpet looked like a tooth, whereupon the carpet turned into a molar tooth with two roots protruding from its base which represented - played the part of - the legs of the person shaking the carpet from the window! Such imagery, as we shall see later ("Creativity"), is made constructive use of by surrealist painters.

Hypnagogic mentation as a whole appears to be related to a mode of experiencing that functions at a lower level



of energy requirements than the active, waking, kind of mentation. Moreover, the mere functioning in the former seems to be connected with a gaining in energy rather than expending. In my own studies in which subjects were asked to sit in a relaxing position, close their eyes and turn their attention inwards watching receptively for whatever imagery might emerge, practically all subjects reported feeling "refreshed" and "envigorated" at the end of each experiment. To a certain extent this was to be expected since relaxation formed an integral introductory part of every experiment. However, it was soon noted that reports of "refreshment" and "envigoration" were both more forthcoming and more emphatic from those subjects who also reported as having experienced a considerable amount of imagery as opposed to those who reported very little or none. As noted elsewhere in this paper, the deeper the relaxation of the subject, the deeper the hypnagogic state and more profuse the emerging imagery. But my studies also suggest that, given the initial relaxation, emerging hypnagogic imagery (and the accompanying mentation) may deepen the former and thus initiate a self-perpetuating cycle of ever deepening relaxation and imaginal experiences. This seems to be in agreement with Leroy's (1933) and Sartre's (1978) seeing hypnagogia as a deepening state of self-induced paralysis. The "refreshing" and "envigorating" features may, in fact, be functions of the hypnagogic components of "passive concentration" or "passive volition" and "absorption" to be discussed below. In which case the term "regressive" is rather misleadingly employed here if it is to be understood merely as "a primitive form of thinking".

Although, viewed in ontogenetic terms, hypnagogic mentation may indeed be called "regressive" - using the term in its usual psychoanalytic definition of referring to a channel of expression belonging to an earlier phase of development (Drever 1964, p.244) - it is arguable whether the term, with its pejorative connotations, is justifiably employed in those cases where hypnagogic mentation appears in the absence of tiredness either

spontaneously or deliberately induced, either in a pre-sleep setting (as a state preceding and leading into sleep) or in psi experiments, religious prophesying (Tappeiner 1977) or in any other setting in which it is intentionally produced (see Part Two). As Tappeiner (1977, p.27, note 4) points out, "regressive" "is a somewhat biased term which does not take note of more recent studies which interpret the return to 'primary process thinking' as neither regressive nor progressive but in terms of organismic intention".

By "recent studies" Tappeiner is mainly referring to Deikman's (1971) paper on "Bimodal Consciousness" in which it is proposed that human beings function primarily in two modes: "(1) the receptive mode oriented toward the intake of the environment, and (2) the action mode oriented toward manipulation of the environment" (Deikman 1971). In the action mode, Deikman explains,

the striate muscle system and the sympathetic nervous system are the dominant physiological agencies. The EEG shows beta waves and baseline muscle tension is increased. The principal psychological manifestations of this state are focal attention, object-based logic, heightened boundary perception, and the dominance of formal characteristics over the sensory; shapes and meanings have a preference over colours and textures. The action mode is a state of striving...

(Deikman 1971, p.481)

By contrast, in the receptive mode,

the sensory-perceptual system is the dominant agency rather than the muscle system, and parasympathetic functions tend to be more prominent. The EEG tends toward alpha waves and baseline muscle tension is decreased. Other attributes of the receptive mode are diffuse attending, paralogical thought processes, decreased boundary perception, and the dominance of the sensory over the formal...This mode would appear to originate and function maximally in the infant state.

(Deikman 1971, p.481)

It is in reference to the latter mode as it demonstrates itself in a number of states (in this case in reference to meditation) that Deikman (in Tart 1969) stated:

One might call the direction regressive in a



developmental sense, but the actual experience is probably not within the psychological scope of the child. It is a de-automatization occurring in an adult mind, and the experience gains its richness from adult memories and functions now subject to a different mode of consciousness.

(Deikman 1969b, p.34)

Significantly, Deikman (1971) does not equate the two modes with the secondary and primary processes of psychoanalytic theory (ib., p.483). In particular, he points out that although there are similarities between the receptive mode and the cognitive style associated with the primary process, since his bimodal model addresses itself to the "functional orientation" of the organism, "the receptive mode is not a 'regressive' ignoring of the world or a retreat from it - although it can be employed for that purpose - but is a different strategy for engaging the world in pursuit for a different goal" (ib., p.483), a mature organismic option appropriate to a particular dimension of reality (ib., p.481).

Deikman's active-receptive dichotomy has certain implications which are not pointed out by the author but which I believe ought to be brought out as they may help us better to understand both the perceptual-cognitive aspects of hypnagogia as well as similar aspects encountered in adjacent states to be discussed in Part Two. These implications flow from studies of the emotive attributes of the autonomic nervous system and are, as in Deikman's model, generally dichotomized into those belonging to the sympathetic part of the system and those correlated with the activities of the parasympathetic division. We know that on the physiological side

the sympathetic division prepares the animal for emergency reactions under the stress of hunger, pain, rage and fear. It accelerates the pulse, increases blood pressure, provides added blood-sugar as a source of energy. The parasympathetic division does in almost every respect the opposite: it lowers blood pressure, slows the heart, neutralizes excesses of blood-sugar, facilitates digestion and the disposal of body wastes, activates the tear glands - it is generally calming and cathartic.

(Koestler 1978, p.293)

The emotional features of the two divisions have been grouped under different terms by different authors. Koestler (1978) summarizes their various descriptions as follows:

Allport (1924) related the pleasurable emotions to the parasympathetic, the unpleasant ones to the sympathetic. Olds (1960) distinguishes between 'positive' and 'negative' emotive systems, activated respectively by the parasympathetic and sympathetic centres in the hypothalamus. From a quite different theoretical approach, Hebb (1949) also arrived at the conclusion that a distinction should be made between two categories of emotion, 'those in which the tendency is to maintain or increase the original stimulating conditions (pleasurable or integrative emotions)', and 'those in which the tendency is to abolish or decrease the stimulus (rage, fear, disgust)'. Pribram (1966) has made a similar distinction between 'preparatory' (warding-off) and 'participatory' emotions. Hebb and Gellhorn (1963) distinguish between an ergotropic (energy-consuming) system operating through the sympathetic division to ward off threatening stimuli, and a trophotropic (energy-conserving) system which operates through the parasympathetic in response to peaceful or attractive stimuli. Gellhorn has summarized the emotional effects of two different types of drugs: on the one hand the 'pep pills', such as benzedrine, and on the other the tranquillisers, such as chlorpromazine. The former activates the sympathetic, the latter the parasympathetic, division. When administered in small doses, the tranquillisers cause 'slight shifts in the hypothalamic balance to the parasympathetic side, resulting in calm and contentment, apparently similar to the state before falling asleep, whereas more marked alterations lead to a depressive mood'. The benzedrine-type drugs, on the other hand, activate the sympathetic division, cause increased aggressiveness in animals, and in man in small doses alertness and euphoria, in larger doses over-excitation and manic behaviour. Lastly, Cobb (1950) has summed up the implicit contrast in a pointed form: 'Rage is called the most adrenergic, and love the most cholinergic (characteristically parasympathetic) reaction'.

(Koestler 1978, pp.293-4)

Koestler carefully points out that, "while there is ample evidence that the self-assertive emotions are mediated by the sympathetic-adrenal division, there is no conclusive proof for the symmetrical correlation suggested here. Such proof can be forthcoming only when human



emotions outside the hunger-rage-fear class will be recognized as a worthwhile object of study by experimental psychology - which at present is not the case" (ib., p.294). An interesting observation made by Koestler (ib., p.295), and pertinent to the discussions in the present and following sections of this paper, is that the parasympathetic division may, under certain conditions, act as a catalyst that triggers its antagonist into action, as in the case of self-transcending identification with the hero on the screen (self-transcendence being a typical feature of parasympathetic activity) which leads to the release of vicarious aggressiveness against the villain. On other occasions, Koestler points out, the two divisions reinforce each other, as in the sexual act. Later, I shall argue that the increasingly predominating parasympathetic shift in hypnagogia may not only lead to self-transcending identification with, or subjectification of, objects and events in one's external and internal environment (including one's hypnagogic images), but it may also be brought to a certain degree of balance with the sympathetic division whereby, although the former is still predominating, the latter is allowed some measure of activity - within the limits of the former.

It should be clear from the above, and from evidence presented in earlier sections, which one of Deikman's modes is predominant in hypnagogia: all the characteristic features of the receptive mode seem to be present in this state, whether hypnagogia is viewed as it appears spontaneously or as a state deliberately induced. When it occurs spontaneously it can be regarded as an organismic shift to the receptive mode, and as such it must have an "important biological significance" (Liberson and Liberson 1966, p.302; see also chapter 19). Both in its deliberate induction and spontaneous occurrence, it appears to take in the (physical and psychological) environment 'paralogically': that is, percepts, concepts and images and their associations appear to be formed according to a set of rules other than those encountered in the "striving" action mode.

Interestingly, and pertinent to my observation that subjects tend to report feelings of invigoration and refreshment in hypnagogia, Deikman notes that as an attribute or component of a mode shifts or changes there is a tendency for other components to follow suit: thus, for example, "a decrease in muscle tension can decrease anxiety because of a shift in mode" (ib., p.482). As he further explains, the reduction of anxiety as a consequence of muscle relaxation makes sense in so far as anxiety, as an affect linked to a future action, is related to the action mode, whereas muscle relaxation being a component of the receptive mode causes a shift to the latter and, therefore, a decrease in anxiety. Conversely, mounting anxiety would hinder a shift to the receptive mode. This is clearly highly compatible with my observation above in respect to the ever deepening of relaxation and increase of imaginal experiences in hypnagogia.

Further, the receptive mode's mark of dominance of the sensory over the formal is also one of the basic features of hypnagogia. Indeed, in the hypnagogic phenomena studied by some investigators (e.g. Silberer 1965; Vihvelin 1948; van Dusen 1972) it is explicitly pointed out that formal and abstract thinking translates itself into imagery. Moreover, in those cases where the presence of the autosymbolic phenomenon is not all that clear, it is the sensory-imaginal, the imagery, that makes its impact on the hypnagogist, as we saw in chapter 4. In the same chapter was also noted the phenomenon of "body boundary changes" (e.g. McKellar 1979b; Critchley 1955; Sartre 1978) which is another mark of the receptive mode. Deikman, as I myself do in other sections of this paper, draws attention to the occurrence of this phenomenon in the deep levels of relaxation in autogenic training (Schultz and Luther 1959; Kleinsorge and Klumbies 1964), in sensory deprivation, and in the induction phase of hypnosis (see Part Two).



Internalization-subjectification and fascinated attention:

It would appear that as attention becomes diffused in the receptive mode perceptual and conceptual boundaries become 'fluid'. As attention is not focal, aspects of an object ordinarily unnoticed may acquire prominence. This mark of the receptive mode Deikman (1969a, 1969b) noted in the reports of his subjects in meditation experiments in which he specifically instructed them to adopt an attitude of "passive abandonment". The results showed that "sensuous attributes of the object, which are ordinarily of little importance, become enhanced and tend to dominate". In hypnagogia, too, where the attitude is clearly one of passive abandonment, we observe a similar phenomenon in two respects: (i) in the way ordinarily unimportant features become prominent, and (ii) in the manner of "irrelevant" associations. Moreover, in hypnagogia where experiences are, properly speaking, more imaginal than perceptual, certain perceptual attitudes of the receptive mode can be seen in full operation. For instance, Deikman (1971, p.483) in order to illustrate the application of the two modes makes reference to Poetzl's (1960) observation that stimuli are processed differently according to whether they are perceived in the periphery of awareness or in the centre (focal). "In the former case, dream processes dominate, in the latter case, rational logic holds sway... Stimuli in the periphery are processed according to the more indirect, sensually oriented, intake goal of the receptive mode. This mode of thought uses paralogical strategies" (Deikman 1971, p.483).

In hypnagogia this can be seen in the way the organism receives and incorporates into ongoing mentation exteroceptive and proprioceptive stimuli, viz. it receives stimuli diffusedly, in "the penumbra of consciousness" as Leaning (1925) put it; further, since attention is not focal, i.e. not selective, differentiating and isolating, many more (normally unimportant) features clamour for it; the subject can thus be said to be more 'open' and 'sensitive' to fainter stimuli in his external and internal

environment than when he is engaging his attention in a "striving" attitude (e.g. Arnold-Forster 1921; Ornitz et al 1967). The attitude of openness and sensitivity to physical stimuli is paralleled, as we saw earlier, by openness and sensitivity on a psychological level. Indeed, this latter feature, along with that of "psychological incorporability", will be seen later (chapters 8, 12, 13, 18) to constitute essential elements of the important phenomenon of loosening of ego boundaries (LEB). This latter, will be argued, lying as it does at the root of all hypnagogic experiences, may hold the key to hypnagogic mentation and its presence may help to explain mentation in other psychological states of the organism. Depending on the prevailing cultural and psychological setting it may take on names such as 'role-playing', 'adaptability', 'egolessness'. Significantly, behind these terms there appears to lie the important hypnotic factor of "absorption" or "absorbed attention".

Tellegen and Atkinson (1974) interpret this factor as: a disposition for having episodes of 'total' attention that fully engage one's representational (i.e. perceptual, enactive, imaginative, and ideational) resources. This kind of attentional functioning is believed to result in a heightened sense of the reality of the attentional object, imperiousness to distracting events, and an altered sense of reality in general, including an empathically altered sense of self.

(Tellegen and Atkinson 1974, p.268)

Instructively, in referring to episodes of "total attention", the above writers state that these "can be described by such terms as 'absorption' and 'fascination'" (ib., p.274) - and these latter terms appear to be of great importance as aspects of the 'psychological incorporability' of hypnagogic mentation in asserting the receptive attitude of the state as the latter unfolds in "passive abandonment". The same or similar terms have been employed, as Tellegen and Atkinson point out, by other writers to describe the psychological states of meditation, expanded awareness, peak experiences, mysticism, esthetic experience, etc. Maslow (1968) uses the terms "fascination" and "complete absorption" to describe peak



experiences. Schachtel (1959) describes the "allocentric" perceptual mode as involving "totality of interest" and openness to the object in all its aspects with all one's senses, including one's kinesthetic experience (cited by Tellegen and Atkinson 1974, p.274). When "totality of interest" is present, the above writers continue, "a unified representation of the attentional object" takes place.

In this state of "fascination", wherein the representational system is fully engaged, the organism "cannot... maintain salient qualifying 'meta-cognitions', that is, thoughts about the primary representation, such as 'this is only my imagination' or 'this is not really happening'" (Tellegen and Atkinson, 1974, p.274). This, as we know, is a characteristic of the later hypnagogic state where a subject becomes completely absorbed in imaginal 'activities', that is, he becomes 'fascinated' and loses his ability for reality testing (e.g. Vogel et al, 1966). Similarly, Sartre (1978, p.49) states that "hypnagogic phenomena are not 'contemplated by consciousness': they belong to consciousness", "we do not contemplate the hypnagogic image but are fascinated by it" (ib., p.50). He further explains that

what happens here is similar to certain psychoses which possess a simple and also a delirious form. Hypnagogic images belong to the delirious form. I am still able to reflect, that is, to become conscious of being conscious. But to maintain the integrity of this primary consciousness it is necessary that the reflexive consciousness be in turn charmed, that it does not place before itself the acts of primary consciousness in order to observe them and describe them.

(Sartre 1978, pp.50-51)

It might also be added that the activities of primary consciousness are here accompanied by 'primary logic' as it is encountered in the receptive mode. But before we move further on this line of argument there are certain points brought out by Sartre that need clarification.

First, Sartre uses the term "fascination" in a derogatory manner to mean "deterioration of consciousness", that is, the charming of secondary consciousness and the

maintenance of the integrity of the primary consciousness is considered "regressive": it is a following into "bondage". Second, the "charmed" and "fascinated" attributes are in reference to the dimension of attention as it is understood to operate in the normal waking state. He explains that when consciousness is "fascinated" it does not mean that it is not fully centred on its object: "but it is not in the manner of attention" because "all phenomena of attention have a motor basis (convergence, accommodation, contraction of the visual field, etc)", and "these different movements are for the time being impossible: to produce them we must emerge from the condition of paralysis in which we find ourselves, in which case we return to the wakeful state". To pay attention to something, he continues, even if this is a thought, it means assigning it spatial localization. In this way "there results a sort of objectification of the subject in relation to the object (be it a sensation or a thought)".

In falling asleep the motor basis of attention is weak. From it there results a different type of presence for the object. It is there but without externality; we cannot observe it, that is, build hypotheses and control them. What is lacking is precisely a contemplative power of consciousness, a certain way of keeping oneself at a distance from one's images, from one's own thoughts, thus permitting them their own logical development...

(Sartre 1978, p.49-50)

Now, Sartre's approach to the subject raises a number of problems not least of which is that resulting from his apparent equation of the notion of attention with that of contemplation. It seems to me that it is of paramount importance to clarify these notions if we are to avoid conceptual muddle and better advance our understanding of the hypnagogic state. Contemplation is clearly an attitude of placing a spatial and/or temporal distance between oneself and objects, the latter being anything that is not considered to be part of the 'self'; it can also be the placing of a distance between the 'assumed' psychophysical self (i.e. one's physical body, instincts, emotions, intentions, thoughts, etc), which is thus considered to



be the object, and an occult or metaphysical self with which one identifies. (here we are not concerned with the common-view distinction between 'active life' and 'contemplative life' since this is only a distinction between external and internal activity). In contemplating one obviously directs one's attention to the object of contemplation somehow dividing it between the object and self-awareness. But this is not all that should be understood by attention. Deikman (1971) pertinently distinguishes between "focal attention" which is a component of the active mode, and "diffused attention" a component of the receptive mode. And although it might be argued that in "diffused attention" the object is not 'centred' in the generally understood sense of focal centring, we must be careful to observe that it is 'centred' in the sense that one is absorbed in it. Tellegen and Atkinson (1974, p.274) similarly tell us that "absorbed attention is highly 'centred' (in a roughly Piagetian sense)"; and even though these two terms, "absorbed attention" and "diffused attention", are clearly not to be identified, both appear to lead to a very similar, if not identical, state of consciousness, namely "fascination", in which one cannot carry out "meta-cognitions" or "contemplate". The clue to how this comes about is to be found, I believe, in Deikman's illustrations of the employment of the receptive mode in reference to the Gaffron (1956) phenomenon, experiments in meditation, and studies in Zen consciousness.

In the Gaffron phenomenon the argument revolves round the experiential differences between two types of centring one's attention, viz. the different ways one feels about an object when attention is centred (a) on the near side of the object, and (b) the far side of the object. In the former, attention is focal, "the object is perceived 'exteriorly', and the dominant qualities of the experience are form, surface, distance, and separateness from the observer. Awareness centred on the far side of an object ('mere looking') features 'proprioceptive' qualities of volume, weight, and 'interior' feelings of tension and inner movement. The object seems to intrude or extend into the boundaries of the self" (Deikman 1971, p.483). It is

this internalization or subjectification of the object, as opposed to Sartre's "objectification of the subject", that shows the inappropriateness, indeed, the inapplicability of contemplation: in order to contemplate one must objectify and stand apart from the object, an activity unobtainable in the state of fascination. In meditation, for instance, one employs "passive concentration" in exercises which are designed to dissolve the distinctions between self and object, either by directing one's 'attention' to negating the conceptual and experiential barrier between the two through "passive abandonment" or by 'concentrating' one's whole attention on the object to the extent of 'forgetting' oneself (dissociating oneself) and becoming absorbed in the object. "Objects of absorbed attention", Tellegen and Atkinson (1974, p.275) tell us, "acquire an importance and intimacy that are normally reserved for the self and may, therefore, acquire a temporary self-like quality".

It would appear that, whether the state is viewed as a "taking in" of the environment (absorbing the environment) or as an absorption of the self into the environment (into the object of "total attention"), the result is the same: internalization of the object, fascination, inapplicability of contemplation. In the depths of total attention one is not 'active' but 'receptive', one is neither manipulating the external, perceptual environment nor the internal, imaginative environment, but enters into an immediate relationship with it wherein one 'forgets' oneself, i.e. he relinquishes secondary or contemplative mentation. This immediacy appears to endow the environment with a sense of reality which is "more vivid" and "more real" than ordinary reality (see reports of subjects in chapter 4). In this state of fascination there is a sense in which one's attention is 'caught', one is held captive: it is a state of self-hypnosis in which the separative, contemplative aspect of self is ostracised. It is of great relevance here that "absorption" was found by Tellegen and Atkinson (1974, p.275) to be the factor most "consistently associated with hypnotic susceptibility": it shows how in hypnagogia



a subject may gradually relinquish the attitude of contemplation and by being absorbed in imaginal activities become 'fascinated' (or, vice versa, one may become 'fascinated' by being absorbed in imaginal activities and thus relinquish the attitude of contemplation). Auto-suggestibility and psychological incorporability or internalization of the environment (subjectification of the object) are thus attentional attributes of that aspect of receptivity which is operational in hypnagogia.

It is important to note at this juncture that attention in hypnagogia is both 'diffused' and 'absorbed'. That is, attention is not concentrated on an object in a consciously focal and analytic manner but in a merging, internalizing way which by its very nature, i.e. by the fact that subject and object become merged, 'charms' and 'fascinates' the subject. In fact, this form of activity is not exclusively peculiar to hypnagogia, although it is exaggerated in it; it occurs, to varying degrees, throughout our waking life. It becomes more noticeable in creative individuals such as artists, scientists or sportsmen. For instance, a creative violinist or pianist (or any instrumentalist, for that matter) will readily explain that during the execution of a musical piece he, the musical instrument, and the music become one. It is not unusual to hear a creative musician talk of his musical instrument as an extension of his body. The case of the absent-minded professor may illustrate a similar phenomenon in the realm of science. In sport, too, an athlete, say a tennis player, would internalize his racquet and the ball (indeed, the whole court including his opponent) as he anticipates and creates scoring opportunities. However, more often than not in hypnagogia the subject appears to come on to absorption first and then notice the inapplicability of focal attention. That is, he finds himself in the act of seeing an image, or rather a succession of changing images, and then becomes aware how diffused and 'fascinated' his attention is, at which point - i.e. the point of mere awareness that one's attention is defocussed and absorbed - hypnagogia is usually interrupted. This

is to be expected since by becoming aware that one is 'fascinated' implies that one steps back from the object, one begins to contemplate. But, although one appears to come on to absorption first, this is only apparent since we know that hypnagogia as a progressive state includes from its initial stages a psychophysical withdrawal, that is, the subject relaxes his grip, his focal attention, on the environment. Thus diffused attention ushers in a state of fascination which is characterized by absorption. It is the manipulation of these two features, diffusion and absorption of attention, that, as we shall see later, may facilitate a state of double-consciousness and complete or partial dissociation.

Reference to Ribot's (1889: cited by Ellis 1911) distinction between voluntary attention and spontaneous attention may further clarify the present discussion especially since it introduces the notion of will as the defining characteristic of the terms. As Ellis (1911, pp.25-26) explains, the former type of attention "is accompanied by some feeling of effort. It always acts on the muscles and by the muscles; without muscular tension there can be no voluntary attention". This, being precisely the definition given by Sartre (1978, p.49) to his concept of attention, indicates how inappropriate is the latter's view of the singularity of the notion. The concept of voluntary attention is highly compatible with Deikman's (1971, p.481) action mode as "a state of striving" in which attention is "intimately associated with the striate muscle effort of voluntary activity, particularly eye muscle activity". In contrast, spontaneous attention, Ellis continues, "the only kind of attention which animals and young children are capable of", is characterized by "muscular weakness". Similarly, Deikman states that in the receptive mode the "baseline muscle tension is decreased" and that "this mode would appear to originate and function maximally in the infant state". (As a discussion of developmental aspects in a wider, evolutionary setting, will be undertaken in a later chapter, here I shall concern myself only with the feature of volition as it manifests itself in the two types of attention



in the adult human subject). Interestingly, Leroy (1907) has also argued that the spontaneous or automatic type of attention is a necessary condition for the appearance of visual and auditory hallucinations.

The mode of induction, control, and prolongation of hypnagogic imagery:

The term "voluntary attention" implies the employment of will. We would thus expect its opposite term, "spontaneous attention", to be devoid of the notion of will. This indeed would be the case if 'willing' in any shape or form were completely absent. However, in examining the employment of will in general, and in hypnagogia and adjacent states in particular, we become aware that this notion is never entirely absent. What appears to happen is that in hypnagogia the will, like attention, becomes somewhat diffused: it is either not concentrated on the object that engages the subject's sensory modalities or else it is employed in an indirect, roundabout, gentle or 'devious' way. If the will were translated into 'I want' then its diffused type would be rendered by 'I would like to' or 'I don't really care but it would be nice if...'. Leaning (1925, p.377) appears to be suggesting a similar distinction when, in her discussion on the control of hypnagogic imagery, she says that "a difficulty arises by the casual use of 'willing' where one suspects wishing would be a more correct term". More recently McKellar (1979a) writing on the control of hypnagogic imagery some of his subjects reported, says:

One subject - he has the imagery more or less nightly - defined his control in these terms. He told me that he sees a lot of landscapes. He said, 'The scene is going on of its own accord, but I can put something in it'. He gave an example: 'I can't say, "I'll have a square cloud", but I can say, "I'd like a different one, thanks". And a different one will come. I can't specify'. His gratitude and word of thanks towards his obligingly autonomous imagery system may be noted!

(McKellar 1979a, p.193)

Similar experiences have been reported by e.g. Alexander (1909, p.623), Leroy (1933, pp.14-15), Myers (1957).

This is a point of paramount importance and must be brought out explicitly if we are to try and understand the inability of subjects to control their hypnagogic imagery. The literature teems with reports on the spontaneity of the appearance of hypnagogic images and the subjects' lack of control over them. Sartre (1978, p.48), for instance, states that "if they are to appear one must carefully avoid paying attention to the images themselves". Leroy (1933, p.59) notes that "in order to prolong the phenomenon a certain 'absence' of voluntary attention is necessary, as in the case of its generation". Baillarger says that "the phenomenon disappears as soon as active attention is turned on it" (Sartre 1978, p.49). O.H. Myers (1957, p.65) remarks that "concentration on the interpretation of the image interrupts the flow of images". Earlier on the same writer notes that "the subject cannot be consciously selected although, occasionally, a subject resembling the required one will appear, e.g. I wish to see a herbaceous border and I see a curtain patterned with floral designs".

It is clear from the above quotations, which are only a sample taken from scores of similar reports, that the authors are referring to the employment of attentional states quite inappropriate to the induction and control of hypnagogic imagery. Sartre's reference to "paying attention", Baillarger's "active attention", and O.H. Myers' "concentration" all belong to the same type of attentional activity which, when brought into play, "interrupts the flow of images", and usually interrupts or brings to an end the hypnagogic state as a whole. Moreover, the flow of images, Edmunds (1968, p.248) notes, is interrupted not only when active attention is paid to them "but also in another fashion, namely, by starting to think about something. Merely readying the attention as if to think sufficed, even without formulating a problem".

What then appears to be required for the initiation and continuation of the hypnagogic flow of imagery is an



attitude of "diffused" and "absorbed" attention as opposed to "focal" and "reflexive" attention implied in the above quotations, and "passive concentration" or "passive volition". As the latter term implies, volition or will is not employed in a tense, active manner but in a relaxed, receptive one. Attention is not directed forcefully but gently though firmly, not contemplatively but mergingly, embracing and taking in the object or becoming part of it ("allocentric" attitude). In this state the organism is physiologically behaving parasympathetically, and this behaviour is paralleled on the psychological level by an empathic attitude, i.e. by taking-in, merging, internalizing (somewhat akin to digesting on the physiological side).

It would be instructive to remind ourselves here of Foulkes et al's (1966, p.283) observation that those subjects whose hypnagogic imagery is easy to emerge and appears rich and profuse are persons with more relaxed and self-accepting personalities as opposed to hypnagogic nondreamers who have rather restrictive and defensive personalities. It would appear that both the experimental induction and prolongation of the hypnagogic state as well as the exercise of control over its imagery require the presence of these two psychophysical components: parasympathetic activity and empathy. It is obvious that a person with a defensive personality most of the time would be using his sympathetic system and concentrating focally and separatively. This would clearly prohibit the emergence of hypnagogic imagery. What is apparently needed here is an attitude diametrically opposed to that of defense-alarm reaction which employs characteristically the sympathetic system.

As Wallace and Benson (1973, pp.363-4) suggested, the defense-alarm reaction may have had survival value in early man's history and has thus become strongly established in his genetic makeup (although it may be argued that an opposite attitude put in an appearance probably earlier in man's history: see chapters 18 and 19). Survival here implies 'fighting for survival' in an environment which is

inimical or believed to be so. By the same token one may say that the opposite psychophysical state of affairs would prevail when the environment is not thought to be threatening and in which the defense-alarm reaction becomes, therefore, obsolete. Such a state of affairs is precisely what is required for the induction and establishment of hypnagogia.

Apart from the necessary physiological aspect of relaxation, hypnagogic imagery (a) appears as the person relaxes his intellectual grip on the surrounding reality (i.e. stops separating himself from the environment by criticizing, analysing, worrying, acting on the environment); (b) it increases the 'friendlier' the subject becomes with his imagery (i.e. becomes more self-accepting) - here, we may remind ourselves of one of Leaning's (1925, p.318) subjects who reported that, having invited a hypnagogic face to come nearer her, found that since that night all the faces began to float towards her; and of Oswald's (1962, p.97) observation that his hypnagogic images increased, or that he "noticed more" of them, "while particularly interested in them" during the preparation of his (Oswald 1962) book; Oliver (1976, p.119) also observed that the learning process increased the occurrence of hypnagogic imagery, an observation which suggests that the more one concerns oneself with (pays attention to) the imagery the more profuse it becomes; (c) control over it can only be exerted by (i) internalizing it, i.e. becoming part of it, or it becoming part of the subject, and, while in this empathic state, (ii) suggesting the desired prolongation or change or need of interpretation (see section on "Awareness of Significance" where it was indicated that by dissipating one's fear of loss of ego one enters into a 'conversation' with hypnagogia). But it must be born in mind that, as Coué (1922) once put it, "to make good suggestions it is absolutely necessary to do it without effort...the use of the will...must be entirely put aside. One must have recourse exclusively to the imagination". On the hypnopompic side de Manacéine (1897) also observed that hypnopompic visions as continuations of dreams can



be prolonged best by remaining with one's gaze in the same direction as one wakes up (see also Spinoza's example quoted in chapter 4).

Now, referring back to Sartre's (1978) assertions in the previous section, it can be seen that (a) Sartre's argument that the centring of consciousness in hypnagogia "is not in the manner of attention", is refuted, unless it is qualified and restated as 'not in the manner of contemplative or reflective attention'; (b) the motor basis of attention considered by Sartre to be necessary for localization of thoughts and images is not necessary once the imaginal object is 'internalized', that is, once the distance between subject and object is minimized or abolished - indeed, the localization of an image by means of, or accompanied by, intense muscular orientation would, in all likelihood, result in a tension that would lead to the termination or interruption of the state by causing a switch to reflective attention; (c) it is not true that we cannot observe hypnagogic images, that is, build hypotheses and control them. This can be achieved in various ways and to different degrees of success depending on the hypnagogic stage one is operating in, i.e. depending on the depth of relaxation and absorption of the subject. More subtly, it also depends on the empathic attitude one brings to bear on the observation. As argued above this is highly conducive to the induction, prolongation, control, and interpretation of the imagery.

Earlier in this paper I cited examples of hypnagogic imagery control in which various methods were employed. For example, Burdach (cited by de Manacéine 1897, p.239) could make his terrifying hypnagogic visions disappear by concentrating on architectural forms which produced kaleidoscopic figures. This is somewhat similar to O.H. Myers (1957) example quoted above in which he reported that although he was not able to bring on consciously a desired image when he wished to do so, a similar one would appear. My own studies suggest that this is a common phenomenon. For instance, in trying to visualise a red rosebud some subjects saw an open pink rose, others a withering red

rose, and yet others saw different flowers including a row of flowering plants on a windowsill. Goethe (cited by Galton 1883, p.115) whenever he closed his eyes and thought of a rose, a rosette made its appearance continuously unfolding and bringing forth a succession of petals. Similarly, Mitchell (1896) could call up visions before falling asleep but once they appeared he had no control over them. Ladd (1892, p.303) stated that very frequently he could simply choose some simple schema such as would serve as a frame-work for a corresponding object, fixate it in idea with closed eyes and make it appear in the retinal field (see also Binet 1894). One of Galton's (1883, pp.115-118) subject's could bring back to its "starting-point" the hypnagogic image of a cross-bow that had undergone nearly a dozen changes, and could call up the image of a rosebud and make it open its petals. Janet (in Delage 1903, p.248) claimed that he could summon a hypnagogic image almost at will: "all I need to do is to think about an object in semi-sleep for it to become a hypnagogic image". Maury (1878, p.93) reported summoning in a similar manner a portrait he saw in a gallery. Herrick (1895), although unable to bring on any imagery, once it appeared he could prolong it by paying close attention to it. One of Oliver's (1976, p.116) subjects could shift his point of view of the object and look at it from different directions in space. Some of McKellar's (1957, p.41; 1979a; p.193) subjects not only could they control their hypnagogic images but could even participate in on-going hypnagogic stories (cf: Hervé de St. Denis, 1867). Delage (1903) and Warren (1921) both reported that they were able to picture hypnagogic scenes voluntarily. The latter wrote:

I obtain these visualizations by concentrating the attention on the retinal field endeavouring to form pictures out of what I see, and projecting them into a real scene. At first I see only the play of indefinite retinal light, which I weave into a picture with the help of imagination. Then all at once the picture becomes vividly real for an instant. I have never succeeded in prolonging these images. The effort to observe them attentively always throws them back into their former state: and often the attempt to control them



voluntarily has the same result.

(Warren 1921, pp.456-7)

Although spontaneous control of hypnagogia seems to be dependent both on the stage and on personality variables, these can clearly be turned into more universal and specific factors of control by means of training. For instance, we saw above that relaxed personalities and people who have a friendly and welcoming attitude towards their hypnagogic imagery tend to enter hypnagogia quicker, their experiences are more numerous, their ego involvement deeper - the latter clearly implying the ability to become absorbed. It would appear, however, that absorption in hypnagogia need not be so complete as to obliterate the awareness that one is having a hypnagogic experience. This might seem to contradict an earlier argument in which I presented the observation that the moment one becomes aware that he is absorbed in his hypnagogic imagery the flow of the latter is interrupted. Yet, these are precisely the circumstances under which the distinction between the two kinds of attending can be brought out most clearly in respect to hypnagogic control. Edmunds' (1968) observation is very much to the point here:

The experience afforded a critical test of one's ability to be aware through two channels simultaneously. Without losing the picture one could think lightly and descriptively about it: or could perhaps have described it aloud to another person. Alternatively music or even conversation could be listened to in a rather vague background fashion - but the moment definite attention was given to any of these, the picture vanished. This was a real object lesson on the difference between passive diffuse reception of incoming sense signals, and actively going out to meet them with focussed attention.

(Edmunds 1968, p.250)

We can see here that attention is diffuse throughout the experience, that is, the subject's attention is diffuse not only in respect to his imaginal experiences: his whole attention in general is diffuse, including the manner in which he perceives his physical environment.

Thus, control of hypnagogia becomes a matter of sustaining the receptive mode and operating within it. In

this setting the factor of absorption can be likened to, if not indeed identified with, a child's absorption in real or imaginal activities. As remarked earlier, when absorbed a person is operating in the receptive mode, he does not act on his environment the way one acts on an object. This diffusion of attention is in itself a method and a justification, a way of knowing as well as the legislator of the conditions of that knowledge and the judge of its status. Thus, the images and associations that arise in hypnagogia are the result of the employment of the method of diffuse attention (they would not have arisen if focal attention were employed), the very employment of which conditions consciousness and confers a cognitive attitude - it employs a different logic from that used in the active mode. As Poe (1949, p.543) remarked in relation to the ecstasy he experienced during his hypnagogic visions, the viewing of the latter carried a conviction as to their source and nature which seemed a portion of the ecstasy itself.

In this context of diffuse attention, Edmunds' reference to the possibility of verbally describing the hypnagogic imagery as it appears is very important. McKellar (1979b) and Oliver (1976) have employed this method with good results. Although neither of these writers makes detail reference to the attentional state of their subjects, they do report that directed attention dissipates the imagery. Indeed, in this respect, Ardis and McKellar (1956) drew a distinction between attention and scrutiny, noting that the latter is not conducive to the flow of hypnagogic imagery. Similarly, Sherwood (1965, p.87) noted that "a too active attempt to understand them [i.e. the hypnagogic images] may snuff them out altogether and the only successful attitude is one of quiet receptivity and interest...., unbidden, a vivid picture will glow into reality and remain as long as one can hold a purely receptive attitude". It will be remembered that the use of this mode implies that the subject internalizes the environment which is though not to be inimical. Sometimes, while in this relaxed state, a fearful idea or image may



rise into consciousness resulting in a switch to focal attention and active mode, thus terminating the state. This would not explain why hypnagogic nightmares occur but it would explain why hypnagogia cannot be maintained in the presence of fear or anxiety. However, having attained a state of deep physical and mental relaxation in hypnagogia, one can then engage in observational and manipulative activity within the receptive mode, that is, one can observe and manipulate the imagery provided he continues to regard it as part of an environment in which he himself is an integral part, a part not in the sense of adding one unit to another to obtain a whole made up of two separate units but rather in a chemical sense.

In my own studies (see Appendix) I found that it was not always easy for a subject to retain a clear memory of his hypnagogic imagery without constant rehearsal. The latter was carried out either at the end of a hypnagogic experience or punctuated it. In the former case, often a certain amount tended to be lost both quantitatively and qualitatively, that is, bits and pieces of hypnagogic imagery would be lost temporarily or irretrievably, as instanced by remarks like: "There was something else I saw...eh...I forgot... I've lost it now...eh...Oh, yes, there was this strange-looking object like a clock, and after that...eh...oh, it's...oh, I can't remember it. But I'm sure there was something else". I strongly suspect that this difficulty in remembering was due to the fascination and absorption experienced by subjects which prevented them from contemplating and rehearsing. The quality of imagery also suffered a loss in recall: although qualities such as colour, brightness, sharpness and detail, and accompanying feelings were often still there in an 'after-glow', if the subject were not asked to report his experiences immediately after they took place they would change qualitatively, due perhaps both to the fact that they were not hypnagogic any longer, that is, they became memories, and to constant rehearsal which was found to be necessary in order to 'capture' and 'solidify' the fleetingness and changeability of the imagery. On the other

hand, when rehearsal was carried out in the midst of the experience it had a halting effect on it, it interrupted its flow and often terminated it.

It was then decided to have the subjects report their imagery as it occurred. This initially inhibited the flow of imagery because, as it was expected, when readying themselves to report the subjects inadvertently became more alert and analytical. With practice, however, some learned to retain their diffused attention and receptivity while they reported verbally. Interestingly, when they learned the 'knack' of balancing themselves in this state the flow of imagery, its brightness, vividness, and 'reality' increased again. It was observed that subjects who achieved this degree of control of hypnagogic imagery although relaxed they were not at all drowsy. On the contrary, these experiences, as noted earlier about hypnagogic experiences in general, had a refreshing and enervating effect on the subjects who often remarked that after the experiments, which were carried out between the hours of 7.30 and 10.00 in the evening, they felt so full of energy that they could begin another day's work all over again. Personally, I found that this type of induced hypnagogic state can be brought on at any time of the day and, obviously, does not lead into sleep unless the intention to observe and report is abandoned - or never formulated, in the first place. In general, however, "most mentally active people", as Edmunds (1968, p.253) notes, "seldom achieve this state until they are nearly asleep".

In this kind of sustained hypnagogia there is, as noted above, a feeling of being 'chemically' related to the imagery and to one's environment in general. As Rouquès (1946, p.372) observed: "The distance between the object and me changes slowly in such a way that I'm unable to say whether it is the object or me that is moving". Likewise, Oliver (1976, p.117) noted that on several occasions one of his subjects reported that while passively observing one image turning into another "he experienced himself moving towards the objects in the image". This is in clear opposition to the differentiating 'I-It'



attitude one has in manipulating objects in normal wakefulness. Here one is dealing not with an 'It' but with a 'Thou' (Buber 1958). The 'It' either disappears altogether, in which case one is 'fascinated' or falls asleep, or recedes into the background: in the latter case it merely represents the vaguely perceived physical environment (including the investigator). Even the verbal report itself tends to become gradually more 'introverted', that is, while the subject describes what he is experiencing he has less and less the feeling of speaking to a physically present person (i.e. the investigator) and more and more a feeling of talking to the imagery itself or to oneself. Sometimes, this 'introverted' reporting may become so internalized that, again, the subject does not retain any memory of his report (see also Hollingworth 1911; Oliver 1976).

As noted, with practice subjects may learn to balance themselves in hypnagogia and report their experiences without interrupting the flow of imagery. Indeed, once a form of strong rapport with the imagery has been established one may even allow a certain increase of cortical activity and sympathetic arousal to take place. The latter can also be seen in the wider context of waking life where parasympathetic activity may trigger its opposite into action (Gellhorn 1957: cited by Koestler 1978). As Koestler (1978, p.295) put it in one of his examples, the self-transcending identification with the hero on the screen may release vicarious aggressiveness against the villain. The same may be observed in the fully developed hypnotic state where the initial dissolution of ego boundaries is followed by their partial re-establishment and an object-oriented activity is allowed to take place within an established receptive mode attitude (this is discussed in greater detail in the next chapter).

We know that, 'under ordinary circumstances', the hypnagogic state is characterized by an ever deepening physical and mental relaxation and psychological withdrawal which lead into a natural self-hypnotic state and eventually into sleep. This series of events is here qualified by the

insertion of 'under ordinary circumstances' precisely because the series can also be induced experimentally by means of self-suggestion. Indeed, as seen in the first section of this chapter, the factor of autosuggestion is, to a certain degree, present at the inception of hypnagogia even in 'ordinary circumstances'. It is a truism to say that when we lie down to go to sleep "as a general rule...we want to fall asleep" (Sartre 1978, p.51). But the intention to bring about the pre-sleep state can be formulated and the state induced through the sheer employment of the same hypnotic element which is so typical of the more advanced hypnagogia. Thus one may allow oneself to drift as close to stage three of hypnagogia as possible without entirely losing reality testing, i.e. without falling asleep. As one of Oliver's (1976, p.117) subjects said in explaining the procedure he used for obtaining hypnagogic imagery, he "would go to a state of consciousness near asleep and then rouse slightly into the state of seeing hallucinated images".

It is true that most of the reports we have of hypnagogic experiences are made after the experiences have taken place, they are retrospective reports. And although many of these reports have been made immediately after the hypnagogic experience (see e.g. Silberer 1965; Vihvelin 1948; Oliver 1976), they are still retrospective, even when, as in Oliver's (1976) experiments, the subjects were trained to oscillate in and out of hypnagogia, that is, to have the experience then 'waken' to report it and then slip into another one again, and so on. E.A. Poe (1949), for instance, reporting on his own hypnagogic visions and his efforts to control them, writes:

They arise in the soul (alas, how rarely!) only at its epochs of the most intense tranquillity - when the bodily and mental health are in perfection - and at those mere points of time when the confines of the waking world blend with those of the world of dreams... I have proceeded so far as, first to control (when the bodily and mental health are good) the existence of the condition - that is to say, I can now (unless when ill) be sure that the condition will supervene, if I so wish it, at the point of time already described... I can be sure, when all



circumstances are favourable, of the supervision of the condition, and feel even the capacity of inducing or compelling it... I have proceeded so far, secondly, as to prevent the lapse from the point of which I speak - the point of blending between wakefulness and sleep - as to prevent at will, I say, the lapse from this border-ground into the dominion of sleep. Not that I can continue the condition - not that I can render the point more than a point - but that I can startle myself from the point into wakefulness; and thus transfer the realm of Memory; convey its impressions, or more properly their recollections, to a situation where (although still for a very brief period) I can survey them with the eye of analysis.

(Poe 1949, pp.543-4)

Poe's startling himself into wakefulness and then analysing the experience having recollected what took place during the experience per se, typifies the method employed by many researchers in studying hypnagogia. It also shows how, in the depths of this state nearing sleep, the prevailing fascination prevents one from standing back, so to speak, and analysing the experience: the latter can only be carried out when the experience has taken place. As Sherwood (1965, p.86) also noted, "consciousness, though it must be almost in abeyance before the picture will form, must be recalled immediately in order to register a clear impression of what has been seen". This is reminiscent of Oliver's (1976) "highest" level of hypnagogia, and Foulkes and Vogel's (1965) stage three in which one has loss of reality testing and ego-involvement is that of actual dreaming. However, Poe also states that "I am aware of these 'fancies' only when I am upon the brink of sleep, with the consciousness that I am so", that is, test of reality does not completely disappear during his hypnagogic experiences (see also Hollingworth 1911, case 7). What Poe is saying, in fact, is that having stumbled upon these experiences in the natural process of going to sleep, he trained himself in inducing and maintaining passive awareness (passive volition) that facilitated the emergence of these images. We must note here that he is merely aware that he is on the brink of sleep and that his experience is passive, he is simply preventing

himself from falling asleep. It is not always easy, however, to tell whether a subject is simultaneously aware of both the imagery and the fact that he is on the brink of sleep, or that his awareness of being on the brink of sleep comes at the moment he becomes aware of the hypnagogic imagery or vice versa, i.e., that he is aware that he is on the brink of sleep immediately prior to having hypnagogic images. In the case of Poe, he found that when on the brink of sleep he could experience these images; it would also seem that once the imagery appeared (either in the natural process of falling asleep or in the induced state) he became 'fascinated' by it, which fact prevented him from either carrying out an "analysis" of it or rehearsing and memorising it.

Likewise, Archer (1935, p.26) says that he often realizes that he has just drifted into sleep for a few seconds by "the fact that my consciousness has for the moment become incoherent". He realizes this, however, from the point of view of wakefulness, that is, either he returns to wakefulness and recollects/rehearses the experience he has just had, or becomes aware of having the experience and thus wakes himself up. In either case he is employing 'waking logic' (analysing, reflecting, rehearsing), i.e., the active mode. The reference to his consciousness becoming incoherent during his hypnagogic moments is a value judgement pronounced by waking logic: he couldn't have made this judgement while in hypnagogia. The strangeness and incoherence of the state appears to be so only when seen from the point of view of wakefulness (this point is developed in a later chapter in relation to creativity). It stands to reason that when such value judgements are made hypnagogia is already at an end.

As argued earlier, hypnagogia may be induced and prolonged by accepting it, and thus allowing it to unfold. This would, clearly, require a switch to the receptive mode. A certain confusion may arise concerning which mode is employed mainly because of the use of terms such as observation which appear to imply the application of the active mode. However, observation is not singularly an



attribute of the active mode. As with concentration and attention, there is a receptive aspect of it. Moreover, as suggested above, a certain degree of 'wakefulness' and sympathetic arousal are possible within the confines of the receptive mode once the latter has established itself as a conscious activity in an individual. That is, one can remain in hypnagogia and observe the unfolding of imagery so long as the observing is not carried out analytically, so long as one suspends judgement and criticism. Archer (1935, p.50) points to this when he says that the hypnagogic phenomena make their appearance "the moment the regulative faculty is off its guard" (cf: Hollingworth 1911, p.107: "removal of constraining mental sets and controls"). It is under these conditions that he can say "I was perfectly conscious throughout, and was consciously studying the phenomena" and that the latter are "waking dreams" (ib., p.41) or "dream-activity proceeding under the observation of the waking mind" (p.44).

Archer (ib., p.28) enters into an apparent contradiction when, arguing against Maury's saying that "in the intermediate state between waking and sleep, the mind still retains full consciousness of itself; it does not believe in the reality of the fantastic images or sensations", he states that "this does not tally with my experience. Hypnagogic images or pictures are to me as real as any dream experience, and are symptoms of a cessation of 'full consciousness'". The contradiction can only be resolved when we realise that Archer lumps all his hypnagogic experiences together irrespective of stage. Thus, sometimes his consciousness is that of dreaming (latter part of stage 3 of hypnagogia) whereas on other occasions he 'observes' the flow of imagery in perfect consciousness having suspended his "regulative faculty". Another quotation from Archer (ib., p.45) should throw more light on this problem. He recounts that one day after lunch he had a nap and that

I woke so far as to know perfectly where I was, and to be aware of the passage of time; yet my dream went on parallel, as it were, to my waking consciousness - imaginary people continued to say

and do things, quite uncontrolled by my will. Thus I was able, for an appreciable space of time - perhaps a minute, or even more - to watch myself dreaming.

(Archer 1935, p.45)

We can see that in this quotation Archer is in some form of double-consciousness. He is, however, merely conscious that he is not fully asleep any longer: his attention is primarily concentrated on the ongoing dream activity. This is of great importance as it shows that it is the receptive mode which is still operating and that he is, to a certain degree, still fascinated by the dream which continues uncontrolled by his will: had he employed his will he would have terminated the dream (he would have switched to the active mode). I should also argue that Maury's "full consciousness" operated under the same or similar conditions and that it (i.e., his "full consciousness") did "not believe in the reality of the fantastic images or sensations" only in so far as he was aware, like Archer, that these images belonged to another realm, a realm that can coexist with physical reality (Isakower 1938, p.344). The recognition that the images do not belong to one's physical environment does not necessarily imply that they are dismissed as 'unreal' (Leroy 1933, p.125). This can be seen in the latter stages of hypnagogia, and in particular in hypnagogic nightmares, wherein their reality becomes temporarily unquestionable. Indeed, one need only acknowledge their existence and, so long as he does not dissect and analyse them, they will unfold and permit 'observation'. What is important here is to note that attention, concentration, consciousness, are primarily concerned with the flow of imagery, and only secondarily with being awake in a physical environment. This is borne out by Edmunds' (1968, p.250) observation above that the imagery will continue to flow so long as one takes in the physical environment "in a rather vague and background fashion".

Thus, it can be argued that hypnagogic imagery may be observed and explored and that this can only be achieved by the subject entering hypnagogia by means of physically



and mentally relaxing and thus switching to the receptive mode, and remaining in this mode paying primary attention to the hypnagogic reality. This constitutes a form of dissociation wherein a degree of automatism may be observed, that is, the subject 'transfers' his awareness to the hypnagogic reality while his sensori-motor systems, along with some kind of automatic consciousness, may operate almost independently, i.e., he may hear music, conversation, doors opening and closing, traffic, etc., all of which register as background events: if active attention is drawn to any of them either because the subject decides to do so or because of a sudden increase of volume (e.g., the loud banging of a door) hypnagogia is brought to an end. Simultaneous verbal reporting can also take place so long as attention is not drawn towards an active search for words, conscious generation of grammatical structures, or intellectual concern for the expression of abstract ideas.

#### SUMMARY AND CONCLUSIONS OF PART ONE:

In this first part of the paper an examination of the occurrence and nature of hypnagogic phenomena was carried out in which the latter were found to be quite common in incidence. They were also found to be of a great variety occurring in all the sensory modalities and involving motor-kinesthetic and speech mechanisms. Their investigation has been carried out by means of analysis of subjective reports, controlled experimentation and induction, and the search for possible physiological correlates.

The best researched hypnagogic phenomena are those of the visual modality. On the whole, these are characterized by their externality, autonomy, clarity of detail, brevity of duration, vividness of colour, by the diffused quality and 'internality' of their illumination, and the sense of reality they impart in the subject. Although usually minute in size, they also appear in gigantic proportions. They differ from ordinary images of memory and fancy in being much more vivid, minute and detailed, and they do

not blend with ordinary images when attempts to inject them with the latter are made. Their classification by content includes formless images (colour clouds and lights), designs, faces, figures, animate and inanimate objects, nature scenes, scenes with people, print and writing. Other, bipolar, dimensions of classification have been offered most of which can be accommodated in a four-group arrangement comprising reproductive, perseverative, familiar, and unfamiliar visual hypnagogic phenomena.

Auditory hypnagogic phenomena include the hearing of crashing noises, one's name being called, a doorbell ringing, neologisms, irrelevant sentences containing unrecognizable names, pompous nonsense, quotations, references to spoken conversations, remarks directed to oneself, meaningful responses to one's thoughts of the moment. Less frequently, whole poems are composed. As with the visual kind, auditory hypnagogic phenomena are characterized by their externality, autonomy, and vividness.

Other hypnagogic phenomena include somesthetic, kinesthetic, tactile, thermal, gustatory, olfactory, and synesthetic experiences such as myoclonic jerks, falling, the feeling that one is being touched, numbness and swelling and other body schema disturbances (e.g., blurring of body outline), a sense of heat or cold coursing through the body, a variety of smells and tastes, the seeing of a visual image in response to a sound.

Like the sleep onset phenomena, the hypnopompic variety of hypnagogia occurs in all the sensory modalities. This includes continuations of dreams, anticipatory experiences, and phenomena occurring after the subject has awoken. Hypnopompic experiences are less commonly reported than sleep onset ones. An experience that occurs at both ends of the state is the speech phenomenon which consists of apparently nonsensical or irrelevant statements or responses made by the subject.

Physiologically, hypnagogia (sleep onset) is characterized by a fall in muscle tonus, slowing of the heart rate, slowing and shift of respiration from abdomen to thorax, lowering of the blood pressure, increase of



insensible perspiration and skin temperature, fall in rectal temperature, appearance of slow eye movements, shift of EEG from low amplitude fast activity to slower brain wave frequencies (theta rhythm). These physiological measurements are found to correlate with a steady decline in the subject's volitional control and awareness of his immediate circumstances, and a steady rise in the frequency of hallucinatory experiences. On awakening (hypnopompic), the values of the above measurements are changed in the opposite direction.

Although some writers have argued for a pure 'hypnagogium' cushioned between full wakefulness and sleep or dreaming, both subjective reports and physiological studies indicate that hypnagogia is a progressive state consisting of stages which stretch from mere relaxation to hypnagogic dreaming. Bearing in mind that relaxation consists of physical and psychological components, I suggested that this dimension might be used as a reference for grouping hypnagogic phenomena by stage.

On the cognitive-affective level hypnagogia is characterized by its receptive attitude and susceptibility to suggestions (paralleled on the physiological level by a sensitivity to external and internal stimuli), its readiness to incorporate stimuli into hypnagogic mentation, the frequent presence in it of an awareness of significance which seems to equip the subject with an understanding of its symbolism and which is the defining characteristic of the autosymbolic phenomenon, i.e., a hallucinatory experience which puts forth 'autosymbolically' an adequate symbol for what is thought (or felt) at a given instant in hypnagogia. Many workers have also pointed out the regressive character of hypnagogic mentation and the decline of affect concomitant with the increase in hallucinatory experience.

As argued in the section on "Regressivity" (chapter 7) the word 'regressive' may be a rather biased term carrying pejorative connotations. It is, thus, more appropriate to view it as a feature of the receptive mode which is another way of engaging the world distinct from the active,

analytic, mode. Indeed, hypnagogia as a whole appears to transpire in the receptive mode, characterized on the physiological level by parasympathetic predominance and on the psychological side by a loosening of ego boundaries (LEB) typified by openness, sensitivity, internalization-subjectification of the physical and mental environment (empathy), passive-absorbed attention. These same features are also pointed out as the conditions for the induction, prolongation, and control of hypnagogic imagery. Specifically, in this respect, it is suggested that a 'conversational' attitude towards one's hypnagogic imagery both increases the latter's occurrence and renders it amenable to control.

The rather considerable stress placed on the analysis of the conditions conducive for the induction, prolongation, and control of hypnagogic imagery can now be more properly justified. To begin with, since the occurrence of hypnagogia necessitates the presence of psychophysical relaxation, the induction of hypnagogic imagery of necessity requires the subject to relax, i.e., let go physically and mentally, which alone might prove of great health value to the subject. Second, the LEB renders the subject more accepting by virtue of its loosening of existing strictures. It also makes available to the subject a mode of experiencing normally not within reach of his wakeful mind. Third, the method of prolonging the hypnagogic imagery both requires the subject to become accepting of his mental processes and helps him gain insight into them, i.e., into his own mental nature. Fourth, acquiring control of, and participating in, his own hypnagogic imagery places the subject in a unique state of consciousness which is distinct from both wakefulness and sleep. Functioning within the receptive mode the hypnagogic subject may thus gain knowledge of an aspect of his mental nature which, although ontogenetically old, is by no means obsolete, and which may in fact constitute a fundamental underpinning of all adult thought, in addition to holding its own ground as an essential counterpart to the conscious, analytic, logical, active mode.



Finally, the examination of the nature of hypnagogia carried out so far has raised a very important problem, namely, that hypnagogic experiences do not always or necessarily lead to sleep. Moreover, hypnagogic visions may occur with open eyes. Although discussion of this observation will be more properly undertaken in Part 3, it will be seen in Part 2 that the occurrence of hypnagogic phenomena, which, however, do not lead eventually into sleep, may render hypnagogia indistinguishable phenomenologically from a number of other states, processes, and experiences.

PART TWO

HYPNAGOGIA AND ITS RELATIONSHIP TO OTHER  
STATES, PROCESSES AND EXPERIENCES



## INTRODUCTION:

In this part of the paper I shall further expand the examination of hypnagogia in the process of relating it to other psychological states and experiences. In carrying out this task I shall argue that the preceding observations and those to be made in this part concerning the character of hypnagogia may provide clues to the kind of realities 'abnormal' individuals find themselves in and the manner in which they operate conceptually, and throw light on the phenomenology and cognitive attitudes encountered in a number of other states, processes and experiences, viz., hypnosis, dreams, meditation, psi, creativity, perceptual isolation, hallucinogenic-drug induced states, photic, pulse current and direct electrical stimulation, eidetic imagery, sleep deprivation and dream scintillations.

Conversely, in relating hypnagogia to these states and processes, I shall avail myself of the existing data and theories concerning these latter to shed more light on the former.

Since hypnagogia is a 'natural' state we all enter at least once daily (or nightly), phenomena encountered in induced, abnormal and unusual experiences, processes and states which also occur in hypnagogia, will be considered as hypnagogic in nature. The rationale being that if a phenomenon occurs naturally, as well as under abnormal or experimental conditions, it makes sense to consider it natural in essence rather than unnatural. Thus, for instance, the use of certain terms such as 'psychotic' and 'paralogical' mentation should not be taken as implying an abnormality when applied to hypnagogia: they are merely terms which arose within areas that have been studied earlier and more systematically than hypnagogia, and they both connote research orientations as well as indicate the kind of reality within which they were coined. As already pointed out, and will be further argued in this and the following part of the paper, hypnagogic experiences transpire in a 'reality' different from that of wakefulness, and terms employed to describe them being coined in the

latter are, therefore, invariably evaluative. Thus, when referring to hypnagogia such terms should be stripped of their connotations and taken merely as descriptive of phenomena.

I shall begin my comparison of hypnagogia to these other states and processes by relating it first to hypnosis, as I believe it would be enlightening, and further facilitate an understanding of the modus operandi of hypnagogia, if attention is drawn to certain features of hypnosis and their obvious presence in hypnagogia, especially since a considerable stress has been laid in earlier arguments on the feature of auto-suggestibility in the latter state.



## CHAPTER 8

### HYPNOSIS:

William James (McKellar 1979b, p.106) thought it probable that we go through a hypnotic state as we fall asleep. Indeed, the close relationship between hypnagogia and hypnosis is clearly observable in the similarities of their successive stages. The induction of both centres on progressive relaxation which embraces both the physical (muscular, autonomic) and the mental aspect (quieting oneself, letting go, ceasing to worry). In both cases the subject's attention is gradually withdrawn from the environment (in the case of hypnosis it is concentrated on the hypnotist's voice), becoming more and more internalised. On the cognitive-experiential side the similarities between the two states are even more striking. As Gill and Brenman (1961) noted, in hypnosis,

we see a significant departure from normal, waking modes of thought: instead of relatively stable, logical kind of thought — which for the most part employs words as its material — we see the emergence of fluid, archaic forms which often employ visual images and symbols as material, forms which do not follow the ordinary rules of logic, and which moreover are not bound to realistic limitations of time and space.

(Gill and Brenman 1961, pp.57-8)

Similarly, P. Sheehan (1979) points out that

The capacity to temporarily relinquish reality in hypnosis corresponds to a regression to the kind of functioning that may facilitate the flow of prelogical ideational processes;.... With the loss of this orientation, the distinction between reality and imagination fades, and primary process modes of thought such as imagery and fantasy are allowed to flow more easily into awareness. The new orientation that is created by the flow of primary process material can be expected to show some of the qualities of the dream state; hypnosis, then, may involve a greater concern than usual with internal mental processes than does the waking state, and, as a result, vivid imagery, hallucinations, fantasies, and dreamlike phenomena may more easily occur.

(Sheehan 1979, p.94).

Kubie and Margolin (1944b) made a distinction between the hypnotic process and the hypnotic state. These, they argued, differ from each other both physiologically and psychologically as well as in the relationships between subject, hypnotist and the external world. In the process of induction there is a gradual elimination of all sensori-motor relationships except for the one required to maintain contact with the hypnotist. They further argue that

Ontogenetically the hypnotic process can be viewed as a phenomenon of regression in that it approaches the sensori-motor state of an infant in the first weeks of life. Naturally, in the hypnotic process this regression cannot divest itself completely of all that has been acquired subsequently; but the expression of all later experiences is channelled through this earlier mechanism. According to this description, the onset of the hypnotic state can be defined as a condition of partial sleep.

(Kubie and Margolin 1944b,p.611).

In this condition, "... the incoming stimuli become indistinguishable from the self, seemingly as endogenous as the subject's own thoughts and feelings" (ib., p.612). The hypnotist's voice is experienced as an extension of the subject's own psychic process. This is strikingly similar to my analysis of hypnagogia wherein external stimuli are incorporated in the subject's ongoing mental processes. Kubie and Margolin refer to this hypnotic condition as a "dissolution of Ego boundaries" which creates a psychological state analogous to that assumed to be present in infancy when the mother's breast is as much part of the infant as is his own mouth. Moreover, "the Ego boundaries are blurred both as to the outer world and as to that between Ego Past and Ego Present" (ib., p.612), that is, information entering the organism through one perceptual channel (e.g. auditory) becomes integrated with preexisting central pathways of association so that new impressions become part of a unified experience in which the past and the immediate present are fused. This is relevant to my present discussion in that it suggests possible explanations (a) of hypnagogic experiences in which, for instance, an auditory image acquires visual form, tactile, olfactory, and other sensory qualities (e.g., Arnold-



Forster 1921; Silberer 1965; Vihvelin 1948) and (b) of the feeling of spatial and temporal immediacy generally experienced in hypnagogia, that is, of the feeling that hypnagogic imagery unfolds in front of the subject at the present time, here and now.

The above writers further argue that "the restriction of sensori-motor relationships, which is the nuclear phenomenon of the induction process, explains both the apparent suggestibility of automatic passivity, and the intensity of the sensory components of the images and memories which subsequently may flow through the mind during moments of hypnagogic reverie" (ib., p.613), and that the "undiluted intensity" with which such images are imbued is due to "the lessened opportunity to make comparisons with actual concurrent sensations". The latter argument is highly compatible with observations that (a) concurrent sensations and perceptions in hypnagogia are perceived "in a vague and background fashion" and that the further in the background they are the more intense the imagery, and (b) the hypnagogic subject's absorption and fascination lessens his ability to make comparisons. Interestingly, Kubie and Margolin point out that "whereas in dream states the sensory data are almost exclusively those of the projective distance receptors (i.e., visual and auditory), in hypnagogic reveries, olfactory, gustatory, tactile and kinaesthetic memories can likewise escape all customary repressive influences and therefore are experienced with exceptional vividness" (ib., p.613). Although I would disagree with these writers on the psychoanalytic slant they place on dreams and hypnagogic experiences, namely, that dreams and hypnagogic imagery need to escape from some form of repression in order to make themselves evident (see arguments against the presence of a 'censor' in chapter 20) their observation that in hypnagogia there is a heightening of all sensorial elements is in agreement with both physiological (e.g. Ornitz et al 1967) and psychological evidence (e.g. Arnold-Forster 1921).

More important, Kubie and Margolin argue that the basic physiological prerequisite for the induction of the

hypnotic state is the formation of a concentrated excitatory focus in the central nervous system, with surrounding areas of non-excitatory processes. In turn, this is dependent upon (a) relative immobilization and (b) monotonous stimulus of low intensity, either continuous or rhythmical. These two factors are closely related and are present, in one form or another, during the hypnagogic state - indeed, they are hypnagogic, that is, they contribute to the induction of hypnagogia. As we shall see (chapter 14), they are also the basic factors in sensory deprivation experiments wherein they yield similar results. In hypnotic induction immobility is an interference with an animal's or human's exploratory or investigatory impulses which are thought to be basic in maintaining a state of general alertness (Kubie and Margolin 1944b, p.614). In human subjects "fixing the eye on a single spot reduces the visual input to a low, continuous monotone. The eye sees only one spot; just as the ear hears only a droning voice or sound". The relative inhibition of the oculo-motor apparatus causes, in its turn, a relevant inhibition "in the entire sensori-motor apparatus which adjusts the human body to the roving and exploring activities of the eye", and "this simultaneous restriction both on the motor and sensory side reduces to a minimum the variegated sensory contrasts upon which Ego boundaries depend" (ib., p.614). As we know, immobilization is also a basic factor in the induction of hypnagogia.

The factor of monotony is seen by these writers as "a physiological fact in which the phenomenon known as 'sensory adaptation' plays the initiating role. Sensory adaptation is created in any receptor organ by a stimulus of constant intensity which is discontinuous but which has a constant rhythm.... Psychologically, sensory adaptation is manifested by a diminution both in the subjective awareness of the stimulus and in the responses which are normally associated with a similar stimulus of perceptibly fluctuating intensity" (ib., p.614). As these authors rightly point out "sensory adaptation is one of the physiological prerequisites to all sleeplike or hypnoidal states",



one of the latter being, of course, the hypnagogic state.

The same writers also point out that rhythm and the induction of sensory adaptation are important precursors to sleep and that "a steady rhythm endows the stimulus with a quality of predictability, which in turn creates an unconscious attitude of relaxed and secure expectancy" (ib., p.615). In this respect, it must be remembered that an attitude of relaxed and secure expectancy, that is, the expectancy that nothing untoward or sudden is likely to occur, is a prerequisite of the hypnagogic state. This sense of security can be induced experimentally by listening to one's rhythmic breathing through a specially devised apparatus (Kubie and Margolin 1944a). Indeed in an earlier paper Kubie (1943, pp.175-6) reported the use of this apparatus for the induction of hypnagogia and the recovery of repressed amnesic data. His patient "was asked to remain silent, listening to his own amplified breath sounds, while focusing his gaze on a small white ring in the centre of a large field of grey cloth. He was asked to count his breath sounds silently to himself, 'one two, one two', or 'in out, in out'" (Kubie 1943, pp.176-6). Ten minutes later he was asked to pose silently, as the starting point of his thoughts, a question he had asked himself earlier: "What is the matter with me?" This resulted in the emergence of vivid images of himself as a child. And "not only was such vivid recall quite absent from his usual associations, but he was able to add certain new items".

A point that would be of interest in a later discussion on sensory deprivation experiments is the distinction made between monotony and rhythmicity by McCulloh in a personal communication to the above writers (Kubie and Margolin 1944b, p.615) and in which he regards "adaptation of the sense organ and adaptation of the central nervous system - the one to monotony and the other to rhythmicity - as two spatially separated but functionally like processes, to be accounted for principally by the factors for extinction already known in the central nervous system". In regard to monotony, Kubie and Margolin draw attention

to the observation made by numerous investigators (Bolton 1894; Sidis 1908, 1909; Jacobson 1929; Kleitman 1939; Lovell and Morgan 1942) of the hypnagogic effect of this factor and of its cumulative influence on the organism:

The longer a state of monotony is maintained, the greater is the minimal change in the peripheral stimulus which is required to disrupt the state of sensory adaptation.... Sustained monotony produces a state of functional de-afferentation of the cortex comparable to that which was produced surgically in Bremer's (1937) experimental demonstration that when high cervical section and section of the cranial nerves deprives the cerebrum of all afferent influences, the cortex yields electrical activity potentials identical with those obtained in sleep.

(Kubie and Margolin 1944b, p.616).

The remark that a state of functional deafferentation of the cortex (reduction of the effects of sensory stimulation) is created through sustained monotony is of great importance, as the occurrence of such a state (a) brings together a number of spontaneously occurring as well as induced states of consciousness (e.g., those occurring in sensory deprivation, meditation, psi, etc.) and (b) points to a physiological switch or shift from 'higher' centres(cortical) to 'lower' ones (subcortical ), and may tie in with an earlier argument that the induction of the hypnotic state requires a focus of central excitation surrounded by areas of non-excitation or inhibition: in the same respect, it will be argued in a later chapter that reduction of the effects of sensory stimulation (functional deafferentation) is a hypnagogic phenomenon and that it leads to a critical reduction of cortical activity and a switch to subcortical activation - the latter becoming a focus of central excitation surrounded by cortical non-excitation or inhibition. Interesting in this respect is Sidis' (1909, p.54) remark that monotony is a necessary condition for the induction of sleep (i.e., the production of hypnagogia) and that "limitation of voluntary activity, limitation of the field of consciousness and inhibition all help to a greater monotony". In the same paper Sidis also posits that sleep is the anabolic phase of a metabolic cycle, that it takes place when stimulus thresholds



are above the levels of perception, and that a receptor becomes non-reactive as a result of monotonous stimulation ("stimulus exhaustion").

Discussing the emotional factors in the induction of the hypnotic state Kubie and Margolin (1944b, p.617) argue that the state of alertness necessary for response to exteroceptive signals is dependent on a number of factors and experiences in the life of an organism. "Thus, if an animal is satiated, or if the 'promise' is never fulfilled, or if pain finally cannot be overcome or avoided, the reaction may become reversed and the same signal will induce drowsiness" instead of the expected alertness. In this way, attentiveness to exteroceptive stimuli comes to have a complex significance in all animal forms. "To withdraw attention from such stimuli implies either a state of satiation, or a retreat from painful tension, or else a sense of security that reaches to the deepest unconscious layers of the personality. The latter state is the goal of the hypnotist..." - it is also the sine qua non condition for the induction of hypnagogia: the latter can never take place in the absence of a sense of security. The hypnotist aims for "the creation of an emotional state in the subject in which it would become possible for him to abate the normal attitude of diffuse alertness and allow his sensory sentinels to doze" (ib., p.617) - and this cannot happen if the subject is in "a state of anger or anxiety, whether this be conscious or unconscious". From an examination of methods and techniques used by hypnotists it becomes evident that

the progressive diminution of the internal responses to sensory signals automatically reduces that share of internal tension which depends upon sensory inflow. But in order to become able to reduce this alert attentiveness to the warning signals which sensory stimuli provide, an individual must feel at least as secure as he ordinarily feels when he retires to bed.... The hypnotist must somehow induce in the subject a freedom from disturbing affects, identical with the emotional relaxation which signals the approach to normal sleep.

(Kubie and Margolin 1944b, p.617).

In the fully developed hypnotic state there is a partial reexpansion of the subject's ego boundaries along with an incorporation of a fragmentary image of the hypnotist within these newly expanded boundaries (ib., p.621). The hypnotist "becomes something which the subject carries around inside of him": the subject acquires an altered Ego (ib., pp.618-9). These remarks have clear parallels in hypnagogia. The incorporability of hypnagogia has been discussed in the first section of chapter 7, along with the increased suggestibility both in respect to oneself (auto-suggestibility) and in relation to hypnopedia. It was there observed that hypnagogia, stretching as far as stage 2 of sleep, was highly conducive to 'sleep learning'. Also, as argued in the same chapter, a certain degree of expansion or cortical activity is possible in hypnagogia so long as it takes place within the bounds of the receptive mode. For instance, visual images appear in front of the subject and sounds may be heard coming from outside him, both kinds of which might suggest a certain 'contemplative' objectifying, attitude on the part of the subject. But, although they appear external to the percipient, these images are entirely dependent on his intellectual-emotive attitude: they will disappear the moment he switches to the active mode, i.e., turns his active attention on (either on them or anywhere else) or becomes angry, fearful or anxious.

The important thing here is that, although the object appears external, i.e., outside and independent of the subject's will, the subject's body and ego boundaries are blurred. Perceptions, although heightened, are not clearly localized: it is as though the perceptual pathways have dissolved. In the early stages of hypnagogia occur, as already noted, body schema disturbances (swelling, elongation, diminution, etc.). As hypnagogia deepens the consciousness of tactile sensations diminishes and disappears. One sees and hears images but there is no localization of seeing and hearing. In seeing, for instance, there is no focusing, no eye convergence (vision is not binocular), no nose shadow, no blinking, no need to turn



to the right or to the left or up or down in order to see: the visions are sharp and detailed and always in front of the subject, and, as far as their localization is concerned, that is all a subject can say about them.

These considerations might, perhaps, justify the use of the term 'regressive' to characterize the imaginal and conceptual activities of hypnagogia in so far as these appear very similar to those assumed to operate in infancy wherein body schema and the localization of events and objects outside this schema are thought to be lacking. As Campbell (1957) argued, sensations, including kinaesthetic ones are the sort of thing a child gradually comes to identify inferentially as occurring in 'his body', and that the physical body is only de facto part of the self and not intrinsically so. However, inference is just what a hypnagogist is unable to draw: even in the case where one hypnagogic image is said to suggest another which then appears out of the former, and in which case one might argue that there was some form of inference, the hypnagogist can never be certain that there was first the suggestion and then the appearance of the second image rather than the two - suggestion and image - emerge simultaneously, or that the second image appears carrying with it the suggestive link, or even that the emergence of the second image is simply heralded by a feeling suggesting (foretelling) its appearance. Let us remember the accompanying awareness of significance encountered at certain hypnagogic stages: it might be argued that awareness of significance is encountered at the deep end of a continuum of consciousness alteration and that at shallower stages of hypnagogia this awareness is less recognizable and that it appears as mere suggestion. Van Dusen (1972), as we saw in an earlier section, proposed that autosymbolism might be present in hypnagogia even at the ideoretinal level.

In regard to physical body identification, in hypnagogia this becomes either weak or entirely lacking. In the early stages of relaxation there is a heavy numbness (e.g., Leroy 1933) followed by body schema changes and then a feeling of lightness 'as if one has no body' (e.g.,

"I feel quite light and bodiless": Isakower 1938, p.332). As Isakower (pp.344-5) noted from a psychoanalytic standpoint, body ego regression (i.e., body schema alterations leading to body schema dissolution) sets in first and becomes further advanced in hypnagogia than the regression of the perceptual ego (i.e., that function of ego which is concerned with identification and localization of perception) that follows. The body boundaries having become blurred and fused with the external world, Isakower (p.337) argues, messages from outside tend to lose the character of separate perceptions (p.339), what is internal and what is external, the body and the outside world, are no longer distinguishable (p.333). In a deeper hypnagogic/hypnopompic stage there are reports of complete body dissociation known as out-of-the-body experiences (e.g., Arnold-Forster 1921, p.151). As we shall see later, this latter phenomenon is deliberately induced by psychics and occultists (e.g., Fox 1962, Muldoon and Carrington 1965, Huson 1977, pp.76-77, Ophiel 1961) who make use of hypnagogia to this end.

We may thus see that in hypnagogia we encounter phenomena and states of consciousness that may be said to resemble those occurring in earlier stages of development. This, as we saw above, is also argued by Kubie and Margolin (1944b) to be the case for the hypnotic process.

Further, in reference to an earlier discussion on the nature of absorption and its presence in hypnagogic experiences, I would like to add Tellegen and Atkinson's (1974, p.276) conclusion that "Absorption, interpreted as a capacity for absorbed and self-altering attention, represents an essential component of hypnotic susceptibility". These writers also draw attention to the fact that investigators in the area of hypnosis often refer to "hypnotic characteristics which have an affinity with aspects of Absorption". For instance, White (Sarbin 1950) elaborated on Braid's mono-ideism, a concept very similar to that of centring of attention (which has been associated with absorption by Tellegen and Atkinson); dissociation, which appears to be intrinsic to absorption, was



assigned by E. Hilgard (1965) a central role in his explanation of hypnosis. J. Hilgard's (1970) concept of "imaginative involvement", Tellegen and Atkinson (1974, p.276) point out, corresponds in nature to "the content of the Absorption factor, particularly that of its two stronger markers, the Reality Absorption and Fantasy Absorption scales. Hilgard, furthermore, found the frequency of involvements to be related to hypnotic susceptibility, just as we found to be the case for Absorption". The latter writers also argue that Shor's (1962) "depth of trance" concept has an approximate counterpart in the facet of absorption they call "heightened sense of reality".

## CHAPTER 9

### DREAMS:

In what follows I shall discuss the phenomenological and physiological similarities between hypnagogic experiences and nocturnal dreams and argue that the former can be comparable in all respects to the latter.

### Hypnagogic experiences as dreams:

Purkinje called hypnagogic visions "the elements of dreams"; for Gruithuisen they were "the chaos of the dream"; for Baillanger "anticipations of dreams"; for Maury (1878) they were the "forerunners of dreams" (p.63), "the embryogeny of the dream" (p.100); Hollingworth (1911, p.100) suggested that "careful observation of this state [i.e., hypnagogia] should be able to catch dreams in the making"; Leroy (1901) proposed that dreams and hypnagogic visions had the same origin and that the latter constituted the elements of the former; Arnold-Forster (1921, p.148) divided the phenomena of the hypnagogic or "borderland state" into two major groups one of which "embraces experiences which stand in so close a relationship to our dreams that no clearly defined boundary can be drawn between them".

Archer (1935, pp.26-27) spoke most emphatically of them as "dreams and nothing else" and argued that they "differ from full-grown dreams in the fact of being nipped in the bud. They should, in fact, be called 'oneiragogic' [i.e., leading to dreams] rather than 'hypnagogic'". He further argued that

all dreaming begins in some such fashion, only that, when we have time to dream dreams out, we forget the induction, the opening vision or phrases. Our memory of dreams almost always plunges in medias res. We suddenly find ourselves involved in some experience or action, with no idea how we got there. But this only means that we have forgotten what may have been quite a long train of preceding incidents.

(Archer, 1935, p.27).



As one of Davis et al's (1938, p.32) subjects reported in reference to his experiences of hypnagogic imagery, "these things are practically dreams, but I am awake enough to catch them". Gastaut (1969, p.41) specifically pointed out that "it is impossible to differentiate between hypnagogic dreaming from true dreaming". Van Dusen (1972) saw a continuum stretching from Eigenlicht to hypnagogic visions and dreams.

A mark that was thought by earlier researchers to be present in nocturnal dreams but not in hypnagogic experiences, and was therefore used as a distinguishing characteristic, was organisation and internal coherence. Hypnagogic experiences were thus thought to be discrete bits and pieces and too fragmented to be called dreams (e.g., Myers 1957; Dement and Kleitman 1957). Archer (1935, p. 39), for instance, conceded: "I have never once, in these few seconds, gone through a dream process of measurable length. A flash of vision or a nonsense phrase is all that the moment of sleep has ever brought me. Not once has a sequence of incidents, however brief, passed across the screen of my cerebral picture-palace". Myers (1957, p.64) argues that hypnagogic visions "are not dreams - they are 'pure' images, following one another without, as a rule, any connecting link between them except, sometimes, an association of ideas". But, in agreement with Archer, he believes that hypnagogic images are some of the main sources of nocturnal dreams, adding that "it is possible, though I find it a difficult discipline, to observe the transition of an E.T.I.[Extra-Temporal Image = hypnagogic image] into a dream". The question here, of course, is one of definition: If a person can observe his fragmentary hypnagogic imagery turn into a dream, is he then dreaming or hypnagogizing?

Various investigators (e.g., Maury 1848, 1878; Leaning 1925; Leroy 1933; Tournay 1941) argued that, unlike dreams and hallucinations, hypnagogic experiences, even when they present themselves as coherent stories, are like shows which the subject watches as a passive spectator. Leroy (1933, pp.101-105) concedes that they are sometimes complete

dreams except for the subject's lack of participation. They are, he says, "hallucinations of a special kind, hallucinations that the subject watches, but which he does not mix in with his life" (p.97), "the images present themselves as spectacles of the reality in which one does not believe, but one contemplates it, in most cases, with curiosity and sometimes with a real pleasure" (p.125), the subject "waits without seeking to comprehend and without prejudging anything" (p.105). The only kind of questions the subject tends to ask as he watches the unfolding of the visions convey only curiosity and detached interest, such as "what's going to happen next, what am I going to see next?" (pp.105-113). For instance, in a hypnagogic experience in which he saw a milk float doing its rounds Leroy reports:

I say to myself 'where is the car going?' without really wanting to know, and without attaching the least importance to this absurd question, since I know that these animated images are not real; I reply: 'It's going to the purchasers!' thinking at the same time that what I have just said is quite stupid, that these are the words of a 'drunkard'.

(Leroy 1933, p.112).

However, not all of the hypnagogic cases reported by Leroy can be characterized as detached observations. One subject reported to him that on seeing the hypnagogic vision of a maggot being threaded on a fishing hook "I feel my fingers working away" (p.107). Another case (p.109) is unquestionably a dream, complete with personal participation and characteristic dream logic. Indeed, although on the whole Leroy wants to retain a distinction between hypnagogic visions as "spectacles" and dreams as "adventures" he appears to concede that the distinction is not always easy to adhere to since in some hypnagogic cases the images extend themselves into sleep keeping some of their character whilst, on the other hand, certain characteristics of sleep and dreaming (such as motor impotence and the belief that one can move one's limbs in response to the contents of the vision) appear in the hypnagogic state (p.118).

The problem here presented is that dreaming has



hitherto been associated with sleep, and so it is thought that, by definition, one has to fall asleep in order to be able to dream. The whole argument then hinges on how one defines dreaming. Dement and Kleitman considered their experimental subjects to have been dreaming if they could relate "a coherent, fairly detailed description of dream contents" (as opposed to NREM sleep 'thinking'). Hauri, Sawyer, and Rechtschaffen (1967) considered unreality, distortion, and length, as the defining features of a dream. These attributes may, in fact, be taken to constitute one main defining dimension of dream, that of content. A second defining dimension being that of consciousness, and a third that of ego involvement. A person is, then, said to be dreaming when he ceases to be aware of his surroundings (loss of reality testing, or loss of consciousness of the situation: cf. Vihvelin 1948) and becomes deeply involved (absorbed) in imaginal activities. Those, like Maury (1878), Tournay (1941) and Vihvelin (1948), who want to argue for a clear distinction between hypnagogic consciousness and dream consciousness do so on definitional grounds: they stipulate that in hypnagogia one must not lose the consciousness of the situation, otherwise he will start to dream (and when he starts to dream he is not in hypnagogia!)

However, it is possible, to return to Myers' remark above, to observe one's hypnagogic imagery turn into a dream while retaining consciousness of the situation. Hervé de St. Denis (1867, p.38) claimed to have been able to induce hypnagogic experiences and turn them into dreams in which he participated "without any break between the flow of ideas". (see chapter on 'Psi' for more detailed cases). Miller (1906) described a whole hypnagogic drama consisting of a number of scenes unfolding in front of her while she was still aware of, and could respond to, her environment. The following is typical of this kind of experience although not as rich and long as that reported by Miller (1906: see chapter on 'Creativity' for her case):

Quite frequently, and particularly when resting in the afternoon, I experience dreams. They do not appear

to be dreams in the true sense of the word in that I am conscious of all that is going on around me. Yesterday afternoon, for instance, I 'dreamed' that I was bidding for a large house at an auction. When I walked out of the house, I saw a truly superb seascape, which even now I can visualize in detail. It was certainly not reminiscent of anything I have seen in a picture nor along any of our coasts. Whilst I was looking at this scene, a man came up and stood beside me. He repeated a quotation: 'Only that which is retained in the heart can...' — the rest I have forgotten. The foregoing is the most recent but only one of many such 'dreams' I have had in this twilight state.

(Dudley 1979, p.86).

Archer (1935) described a similar experience occurring in the hypnopompic state:

On board an Atlantic steamer I had fallen asleep after lunch and begun to dream. Presently I awoke so far as I knew perfectly where I was, and to be aware of the passage of time; yet my dream went on parallel, as it were, to my waking consciousness — imaginary people continued to say and do things, quite uncontrolled by my will. Thus I was able, for an appreciable space of time — perhaps a minute, or even more — to watch myself dreaming. And this is by no means a unique experience.

(Archer 1935, pp.44-45).

More often than not, however, reality testing becomes lost and the subject finds himself in a dream. As Taine (1857) so poetically described it:

The deadened noise of the cars can only just reach you, the dream has completely taken you. At that instant the scene changes. The illusion comes. The phantom takes on a body. The imaginary object appears to be real; the inner forest becomes the outer forest. You see patches of blue sky in the distance, a deer's head, frightened, the scared flight of birds; you can hear the buzzing of insects, the rustling of leaves, the whispering of wind caught in the branches.

(Taine 1857, p.42).

Oswald (1976, p.45) observed that "as sleep draws nearer, the visions and voices become more complex, and many people, when aroused, will describe little adventures in which they seemed to be participating, little dreams in fact, which contrast with a more spectator-like quality of the earlier moments of drowsiness". McKellar (1957,



p.41; 1979a, p.191) and Green and Green (1978, pp.132, 145) reported that some of their subjects were capable of participating in their hypnagogic experiences much as they would in their sleep dreams. On one occasion, moreover, a subject 'dreamed' of changing into an animal: "the imager found himself a member of a group of sheep standing outside a slaughter house. He told me, 'I was one of them. We moved up the gangway. I could feel what all the sheep felt'. In the image, he saw the slaughterman's face and the expression on it. The image was very frightening indeed" (McKellar 1979a, p.191). Reporting one of his own hypnagogic experiences, McKellar (1979a) writes:

I am still quite cross about one of my own hypnagogic images. In it I saw a group of people: as usual they were strangers. Then another stranger appeared, produced a handgun, and proceeded to shoot them down. Although the image was the product of some subsystem of my own mental life, I was very indignant. These people were doing nothing to hurt anybody: they were innocent victims of unprovoked aggression.... One does feel responsible...; at times the imager on return to wakefulness feels an obligation to doze off again and put things right in some previous hypnagogic episode.

(McKellar 1979a, p.191).

One of his subjects, McKellar (1979b, p.89) reports, claimed that he could step into his hypnagogic visions "as an actor may walk onto the stage" and "act the part of a magician and transform the action, even change the characters".

Singer (1976, p.47) having noted that he often dreamed immediately upon falling asleep, he carried out systematic self-observations and found that "the contents of the [hypnagogic] dreams that I did record were typical of my usual dream patterns" (p.48). Subsequently he served as a subject wired up for EEG study during afternoon naps. He continues: "In those experiments, awakened fairly early in the sleep cycle, when I was in stage one but without any evidence of rapid eye movements, I recalled rather vivid dreams" (p.48; see also Slap 1977).

Other examples, where ego involvement and loss of reality testing characteristic of nocturnal dreams are present in the hypnagogic/hypnopompic state, are nightmares (e.g. Aristotle 1931, vol. 3 chap. 3; Leroy 1933; Kanner

1957; McKellar 1957; Myers 1957; Horowitz 1978).

Foulkes and Vogel's (1965) investigation showed that, even though many hypnagogic experiences occur in the form of dissociated elements of visual imagery and thought, "the typical hypnagogic dream seems no less well-organized than its REM-period counterpart" (ib., p.238). In addition, the former is often shown to be, like a REM-period dream, "primary process" in that it contains displacement and condensation which makes its images bizarre and symbolic so that they become susceptible to depth-level psychoanalytic interpretation (ib., p.238; see also Isakower 1938; McKellar 1957, 1979a, Budzynski 1972; Oliver 1976).

In view of the evidence that dreaming takes place not only during emergent EEG stage 1 but also in the absence of REMs (see also Kamiya 1961; Berger et al 1962; Foulkes 1962; Rechtschaffen et al 1963; Maron et al 1964; Dement 1965; Berger 1967; Foulkes 1967; Niedermeyer and Lentz 1976), during continuous Alpha EEG, and during descending stages 1 and 2, Foulkes and Vogel rightly suggest that "much of the 'definitive' data which EEG dream researchers have successfully diffused to professional colleagues and the general public may apply to only one species of dreaming and not to the entire class" (Foulkes and Vogel 1965, p.239). Indeed, further on the same authors suggest that "there may be at least two classes of dreams" (ib., p.241) similar in some respects (reality orientation, ego involvement, internal coherence, symbolism and primary process) and different in others (lack of affect, duration).

On the whole, hypnagogic dreams appear to be shorter than REM-period dreams. Sometimes they also display a revealing continuity characteristic which is often, but not always, absent in REM-period dreams (see e.g. Roffwarg et al 1962, p.253 on 'telescoping' in dreams) and which makes them appear if not instantaneous at least shorter than corresponding events in waking life. This is achieved by "the omission of visual continuity, so that the subject reports that his visual imagery was something more like a succession of snapshots than like a movie..., the continuity residing in the dreamer's 'understanding' rather than



in his visual imagery" (Foulkes and Vogel 1965, p.240). As one subject reported "the images themselves were like a series of stills but it seemed to be unity through the thought itself" (ib., p.240). This mode of dream construction, the investigators note, may well be the factor giving rise to the notion that dreams occur instantaneously. On the other hand, the same research also showed that hypnagogic dreams can be, and sometimes are, comparable in length to REM dreams displaying continuity and duration of events similar to that observed in waking life and nocturnal dreams.

In considering the differences in mental experience Foulkes and Vogel made the interesting observation that those of their "subjects with earlier signs of loss of ego-control and reality testing were less anxious and constricted than those who 'held on' to these functions during the alpha phases" (ib., p.236).

In a follow-up study Foulkes, Spear and Symonds (1966) confirmed Foulkes and Vogel's (1965) observations of the occurrence of dreaming at sleep onset. As in the earlier study, "substantial individual differences in the occurrence of dream-like fantasy at sleep onset" were observed (Foulkes et al 1966, p.283). The 32 subjects in this study were also given psychological tests, including CPI and TAT, and were asked to rate their experiences on a Dreamlike Fantasy scale. The results showed that nocturnal and hypnagogic dreamlike fantasy were not highly intercorrelated with one another, whereas hypnagogic mentation and waking fantasy were found to be positively and significantly correlated. The investigators infer from this "that hypnagogic fantasizing is under the same kind of ego-controls as predominate in the thematic fantasy test, but that neither share as much in common with true nocturnal fantasy as they do with one another" (ib., p.283). The significant positive correlations observed between the CPI scales and the hypnagogic Dreamlike Fantasy ratings pointed to the hypnagogic dreamers being more self-accepting, less rigidly conforming to social standards, and having greater social poise than the hypnagogic nondreamers. Conversely, nocturnal

dreamers were found to be highly socialized, self-controlled and defensive persons. Moreover, the latter's intensity of recalled REM dreams was shown in an earlier study by Foulkes and Rechtschaffen (1964) to correlate positively with scores on MMPI pathology scales. In the present study CPI item analyses of the responses of hypnagogic nondreamers also showed these individuals to closely approximate the standard conception of the authoritarian syndrome (Adorno et al 1950).

The reports of nocturnal dreams were characterized by extremes, that is, awakenings from REM periods produced both significantly more "dream reports" and significantly more no-content reports than did hypnagogic awakenings (Foulkes et al 1966, p.283). The latter showed the hypnagogic state to be more of a graded process.

The conclusions reached in the above study on ego functioning during sleep onset are in accord with those reached by Vogel, Foulkes, and Trosman (1969) who based their study on data provided by the Foulkes and Vogel (1965) findings on gradual loss of (a) volitional control over mentation, (b) awareness of surroundings and (c) reality testing (hallucination) at sleep onset. They took the above three marks to indicate respectively (a) that the subject becomes so involved in internal events that he loses interest in the external world, (b) that the subject becomes further withdrawn and loses awareness of immediate surroundings, and (c) that the subject breaks completely with reality as illustrated by his belief that his internal experiences are taking place in the external world (1969, p.77).

In considering the kind of content reported, Vogel et al noted that "the ego function of maintaining nonregressive content was sometimes impaired during sleep onset" (ib., p.78). They found that "there is a statistically significant tendency for each EEG stage (Alpha, stage 1 and stage 2) to be associated with a different combination of ego functioning" (ib., p.81). This latter they called "ego state". They distinguished three ego states, viz., I, in which the ego remained intact or relatively intact,



i.e. it either maintained both nonregressive content (secondary process mentation) and contact with reality or lost only one of them (this was observed mainly during alpha-EEG), D, in which the ego was relatively destructuralised (see Rapaport and Gill, 1959 , on psychic structure as an abiding configuration of functions), that is, both functions were impaired (usually during stage 1), and R, that is, relatively restructuralised, which was marked by a return to nonregressive mentation accompanied by complete loss of reality testing (usually during stage 2).

Although there were some exceptions to the observed correlations between each electroencephalographic stage and ego state, that is, I-D-R did not always correspond to Alpha EEG, stage 1, and stage 2 respectively, a closer analysis showed that the psychological I-D-R sequence was always present during sleep onset. Regarding the relationship of kinds of content (regressive/nonregressive) to loss of contact with reality, the investigators found that "some withdrawal precedes or accompanies the appearance of regressive content; that, following the appearance of regressive content, loss of reality testing (hallucination) precedes or accompanies a return to nonregressive content; and, finally, that withdrawal from the external environment (disorientation to time and place) precedes the appearance of hallucination" (p.85). These latter findings they compared with the results of sensory deprivation experiments which are shown to be "consistent with.... and very reminiscent of them:... regressive content follows loss of contact with the external world in both sensory deprivation and sleep onset" (ib., pp.87-88). However, the psychological (ego) state of sensory deprivation subjects appears to be that of D, whereas a successful sleep onset ends with the restructuralised (R) stage.

Integrating the findings of sensory deprivation experiments into ego psychology Vogel et al (1969) offered a psychodynamic view of sleep onset according to which the desire for sleep produces a sequence of three decathexes, namely, a decathexis of perceptual information, a decathexis of the perceptual apparatus, and a decathexis of reality

testing function (ib., p.89). The second decathexis induces regressive changes in the ego which, although not necessary for sleep onset, appear to be the unavoidable side-effects of reduced sensory input, threatening thus the ego and producing the need for a defense. The consequent loss of reality testing which is followed by the reappearance of nonregressive content is thus thought to constitute "part of the needed defense which allows sleep to continue" (ib., p.91). Individual differences (length, frequency, EEG stage) at sleep onset are thus seen as the way subjects are able to handle potential threats of regression (this is tied in with clinical impressions that the less anxious and rigid the subjects the earlier and richer their hypnagogic dreams).

The investigators' observation that in hypnagogic D dreams the instigator is the reduced sensory input or withdrawal which produces a regressed state (ib., p.90), indicates that Freud's (1900) findings that (a) dreams are instigated by unconscious wishes, and (b) dreams function to protect sleep, cannot be true of all dreams. That is, unconscious wishes might be present but are a secondary result, they rely on withdrawal in order to manifest through regression. Primarily, hypnagogic dreams represent regressed ego states than unconscious wishes (ib., p.90). Moreover, the hypnagogic D dream "represents a process which tends to disturb sleep" producing in turn the R dream, "a defense against this potential disturbance" (ib., p.90). Thus, the investigators conclude, "different kinds of dreams have different kinds of instigators, and... some dream instigators tend to disturb sleep and others to protect it" (ib., p.90).

Two criticisms may be levelled against this study, one concerning the definition of "regressive content" and the other the relationship and interpretation of the occurrence of D and R.

In the first, "content was rated as regressive only by the presence of one or more of six categories: (a) single, isolated images, such as the number 2,081 hanging in mid air;... (b) An incomplete scene or bits and pieces of a



scene, ... (c) Bizarre, innapropriate, or distorted images, ... (d) Bizarre sequence or superimposition of images, ... (e) Dissociation of thought and image, e.g., one subject reported he was driving a car and simultaneously thinking about a problem in linguistics. (f) Magical, omnipotent thinking" (ib., p.79). Of the six categories, however, (a), (b) and (e) hardly warrant their inclusion in the definition. There is nothing regressive in the vision of an isolated image or an incomplete scene: they both can, and do, appear in normal memory and association. Category (e), too, displays nothing regressive. Besides the fact that there is nothing unusual in doing one thing and thinking about another in everyday life, we (i) may have memories of apparently unrelated events (e.g. driving, linguistics) which deeper analysis might show to have been associated in a past experience, and (ii) since the investigators have not made an attempt to analyse the subject's imaginal experience of driving a car in terms of symbolism, we are not in a position to deny the possibility that this experience is autosymbolic (Silberer 1965), that is, we do not know whether the subject did or did not have the hypnagogic experience of driving a car as a result (symbol) of his thinking about a problem in linguistics. Naturally, if the latter were the case, we might still be dealing with regression in the sense that the scene of driving a car might be thought to be the resultant concrete symbol of an abstract linguistic problem. But, in that case, this particular kind of experience would not constitute a separate category but fall into category (a) or (b) and would come under the same criticism as those two categories. In addition, it should be noticed that "isolated images" and "incomplete scene" appear to deny the occurrence of hypnagogic images which are complete and set in a context and yet are not "bizarre" (see Leaning's 1925, classification, in particular "scenery" and "scenes").

Secondly, in presenting a psychodynamic view of sleep onset, Vogel et al (1969) contend that (a) the psychological sequence I-D-R is not only always present but that (b) loss of reality testing is necessary for the appearance

of R. In the case of (a) the investigators' conclusions on the I-D-R sequence do not appear to be applicable to the occurrence of, for instance, narcoleptic REM dreaming.

Their arguments with regard to (b) are simply not convincing enough. To begin with, it is not explained why reality testing should be lost as part of the defense against D if "regressive changes are not in themselves necessary for sleep onset" (ib., p.89). In other words, it is argued that a process-mentation of the importance of reality testing is sacrificed as part of a defense against a mere "side effect" (D). This does not make very good sense in terms of evolution and survival. On the other hand, the appearance of R, which is defined as nonregressive mentation, i.e., "plausible, realistic, coherent and undistorted" (ib., p.79), could hardly warrant the loss of reality testing: What is the point (necessity) of losing the ability to test reality if the resultant mentation is "realistic"? It seems that either the definition of nonregressive mentation is wrong (or wrongly interpreted in individual cases) or that reality testing is lost for other reasons than those offered by Vogel et al. If the first is true, then the concept of nonregressive (as well as that of regressive, in addition to earlier arguments against the latter), is ill-defined, in which case it may point to the second possibility and lend support to a more plausible hypothesis, namely, that the loss of reality testing follows or accompanies a deepening D state and that the emergence of the R state that follows is merely an indication of the ego's 'acceptance' of the new reality and its ability to function in structuralised mentation once the reality-unreality barrier-threat has been overcome. This would explain the experiences of subject 9 in the study under discussion whose D reports were all in alpha REM with R taking up almost all of stages 1 and 2, that is, the early destructuralisation (implying physical and mental relaxation and lack of fear of regression) allowed for an early and long R state. It might also explain (and this point will be developed more fully later) why psychics — whose state of functioning appears



to have many similarities with hypnagogia — experience, maintain, and develop lengthy periods of regressive mentation accompanied by a nonregressive and "coherent" commentary.

Dreams and shades of dreams:

Referring to the Foulkes and Vogel (1965) remark above that there may be at least two classes of dreams, I would like to draw attention to the fact that Ellis (1897, p.286) had already pointed out that "there are probably many stages in the dream state" and that van Eeden (1969: original 1913) enumerated no less than nine different kinds of dream. Of van Eeden's list there are three types of dream which are of interest to my present discussion. They are: the initial dream, the lucid dream, and the wrong waking up.

Although van Eeden protests that the initial dream is not a hypnagogic experience, his description of it belies his protests. He says that "it occurs only in the very beginning of sleep, when the body is in a normal healthy condition, but very tired. Then the transition from waking to sleep takes place with hardly a moment of what is generally called unconsciousness, but what I would prefer to call discontinuity of memory". This sounds very much like Hervé de St. Denis's turning of hypnagogic visions into dreams without a break in the flow of ideas. Van Eeden continues:

In hypnagogic hallucinations we have visions but we have full bodily perception. In the initial dream type I see and feel as in any other dream. I have a nearly complete recollection of day-life, I know that I am asleep and where I am sleeping, but all perceptions of the physical body, inner and outer, visceral or peripheral, are entirely absent. Usually I have the sensation of floating or flying, and I observe with perfect clearness that the feeling of fatigue, the discomfort of bodily overstrain, has vanished. I feel fresh and vigorous, I can move and float in all directions; yet I know that my body is at the same time dead tired and fast asleep.

(van Eeden 1969, p.146).

What van Eeden is describing here is an unusual form

of hypnagogic dream, the induction and utilization of which is advocated by yogis (see, e.g., Evans-Wentz 1978, p.216) and occultists (see chapter on 'Psi') for achieving continuity between waking and dream life. The hypnagogic core phenomenon of the loosening of ego boundaries is especially noticeable as the absence of bodily sensations, floating and flying and the feeling of freshness and invigoration.

The lucid dream, a term coined by van Eeden himself, had been noted by Aristotle (1931) who wrote that "often when one is asleep, there is something in consciousness which declares that what then presents itself is but a dream". Similarly, Descartes (1934, p.212) remarked that sometimes while we are asleep "we perceive that we are dreaming" (see also: Arnold-Forster 1921; C. Green 1968a; Faraday 1972; Garfield 1976; Sparrow 1976; Watkins 1976; Corriere and Hart 1977; Hearne 1978; La Berge 1981; Hearne 1981). It is not unlike the initial dream in terms of mental state. They differ in the fact of their temporal occurrence: the initial dream occurs early in the sleep cycle whereas the lucid dream takes place at the tail end of it, "in the hours between five and eight in the morning" as van Eeden (p.153) noted. In a lucid dream the subject becomes aware that he is dreaming, whereupon he either awakes or his waking mentation appears to be reinstated while he continues in the dream state, i.e., he appears to himself to be awake in a dream.

My qualifying of the state of the subject by saying that it appears to him that he is awake in his dream is prompted by two observations. Firstly, in the cases where the awareness that one is dreaming results in wakefulness it has been noted that the important contributing factor to the termination of the state has been an 'overcritical' attitude of mind. This might be interpreted that the reported sense of awareness is not sufficient to guarantee the full presence of waking mentation, in which case it might be argued that awareness that one is dreaming is only apparent. This leads to the second observation that often although the subject is fully certain of being 'awake'



in a dream-world he soon 'awakes' to tell someone of his lucid dream only to discover that eventually he does wake up and realizes that he had been having dreams within dreams. Lucid dreams are thought by some workers to take place during short periods of hallucinatory wakefulness (see La Berge 1981, p.53).

As can be seen in the above, lucid dreams tend to grade imperceptibly into false awakenings or wrong waking up, the latter being a dream experience in which the subject imagines himself waking up and getting on with his normal morning routine. McKellar (1968, p.106) reports the case of a subject who dreamed of getting up and making breakfast for her husband who was leaving on a journey that morning only eventually to wake up in reality and find her husband kissing her goodbye having already made and eaten his own breakfast (see Chapters 4 and 11).

McKellar (1979b, pp.87-88) reports another interesting case in which the subject having 'woken up' and found himself in a bathtub as deep as his height noticed on the sides of the bath hypnagogic images such as he experienced regularly. He then 'woke up' for the second time having full memory of his previous state and the added ability of flying, which he practised for a while before 'waking' for the third time to find himself in the kitchen in front of an unusually elaborate meal. Finally, he made his way to the bathroom whereupon he woke up properly.

A personal incident of false awakening reported by Leroy (1933, pp.115-118) brings the hypnagogic and dream states so close together that their distinction is hopelessly blurred. Leroy reports that about 5.30 one morning having woken to answer a call of nature he returned to bed, lay on his back and closed his eyes to find that when, after a while, he wanted to open his eyes he could not do so although he still felt fully awake and aware of the fact that it was daylight and that only a few minutes earlier he had been up. The attempt to open his eyes merely resulted in his seeing beautiful geometric figures, and although the dreadful thought of having gone blind occurred to him this did not detract from his enjoyment

of the visions. His attempt to force his eyelids open with his hand simply led to an intensification of the luminosity of his visual mental field. When he finally managed to open his eyes he found that both his arms were, in fact, under the blankets where they presumably had been all the time. He concludes: "I was in a condition which was not properly the hypnagogic state yet seemed to be both the hypnagogic state and the dream state" (pp.117-118).

A phenomenon related to hypnagogia and to the three types of dream discussed above, and further strengthens the relationship and similarities of these experiences, is what is known in the parapsychological literature as an out-of-the-body experience (OOBE). This is the experience of finding oneself outside one's body, that is, the subject is 'aware' that his consciousness and his physical body are not spatially correlated and that 'he' can move around 'outside' his physical body. Although this subject is discussed in more detail in the section on 'Psi' it is brought up at this point of the discussion both because of its tendency to occur in the hypnagogic-hypnopompic state and its phenomenological similarities with the initial dream and the lucid dream of van Eeden — it will also be recalled that the initial dream occurs at sleep onset and the lucid dream towards waking-up time. Tart (1967) found that his OOBE laboratory subjects tended to spend a great deal of time in a "borderland state". He reports that the OOBES of one of his two subjects seemed to have occurred in conjunction with a stage 1 dream state (see also Hearne 1981). Yet his subject sharply distinguished his OOBES from his dreams. In addition, there were no clearly developed delta waves in any of the subject's EEG patterns. Tart concludes that such experiences appear to be a mixture of dreaming and "something else". This "something else" is subjectively expressed as the awareness (false or otherwise) that one is awake in one's dream or dreamlike state.

A variety of semi-wakefulness difficult to categorize is one in which the subject wakes up momentarily from a dream and then returns to it this time retaining a vestige



of waking consciousness. This state resembles the hypnopompic in that it is a continuation of a dream after the subject has woken; it also resembles the hypnagogic in that the experience is a 'going into' a dream-like state from a waking or half-waking one. It also resembles a lucid dream in that the subject is aware that a dream is taking place.

Interestingly, hypnagogia and the inbetween states were pointed out a long time ago by Swedenborg (1928) who is said to have made great use of them (van Dusen 1972, 1975) and who wrote:

But different is the vision which comes when one is in full wakefulness, with the eyes closed. Nay, there is still another kind of vision which comes in a state midway between sleep and wakefulness. The man then supposes that he is fully awake, as it were, in as much as all his senses are active. Another vision is that between the time of sleep and the time of wakefulness, when the man is waking up, and has not yet shaken off sleep from his eyes.

(Swedenborg 1928, para. 7387).

As noted earlier, Ellis (1897, p.284) took "the condition of consciousness to be almost the same whether the sleep is coming on or passing away". In support of this conclusion he recounted one of his dreams and noted: "I awoke, and my first thought was that I had just had a curious dream which I must not forget in the morning. But then I seemed to remember that it was a real and familiar event. This second thought lulled my mental activity and I went to sleep again" (ib., p.283). Critchley (1955, p.101) refers to this condition as "a sort of subsidiary predormitum and post-dormitum, which might perhaps be better described as a sort of 'inter-dormitum'". A very interesting experience in this respect is reported by Hyslop (1908) who wrote: "I often felt that I had not slept at all during the night. I seemed to be wide awake all the time. I finally discovered, however, that my visual field was occupied with hypnagogic illusions, that I was self-conscious, and that other senses and centres were evidently asleep".

Oliver (1976, pp.2-3), describing his own feedback

induced hypnagogia, differentiates between three "layers" of consciousness in this state. He notes that in the "deepest" level he is not aware of the room or of the sound of the feedback and that his awareness is filled with a dream-like experience over which he has no control, save for that required to arouse and report, even though this too is sometimes lost leaving him entirely dependent on the laboratory observer who then arouses him sufficiently to enable him to report. In the next "higher" level he is able to review the dreamlet although still unable to speak and still unaware of anything in the room. In the third "higher" level he is aware of sounds in the room and can verbally report. In this latter state he also experiences bodily disconnections and distortions as well as distortions of perception of time and of his relationship to objects in the room.

We can see here that in Oliver's experience the "deepest" level is not at all dissimilar, in terms of reality testing, to the nocturnal dream state, that in the second "higher" level being able to take stock of what has occurred in fairly 'realistic' terms he is probably in a similar state to the one Ellis found himself in as he became cognizant of having "just had a curious dream which [he] must not forget in the morning", and that in the third "higher" level he is in a split-consciousness state which borders on common reality, deep daydreaming, and abnormal or paranormal perception.

#### Some implications for philosophy:

The discussion so far in this section has shown that the hypnagogic-hypnopompic state can sometimes be a full-blown dream and that such a dream may take place while the subject retains awareness of his environment, the latter claim being demonstrated either objectively (e.g. the person may respond correctly to environmental stimuli) or subjectively (e.g. the person 'knows' that his body is asleep). It has also been shown that there are more than one kind of dream and that there are at least certain cases



in which the distinction between the hypnagogic-hypnopompic state, dreaming, and wakefulness is critically blurred.

Although it is not my intention at this point to enter into a detailed philosophical discussion concerning the status of sleep, dreams and wakefulness, the above observations carry certain implications which I would like to discuss in brief, mainly in reference to Malcolm's (1967) views on the subject.

The central thrust of Malcolm's arguments concerning dreaming hinges on two suppositions: One, a person can only dream while asleep, and, two, while asleep a person cannot intelligibly be said to have experiences. From these two suppositions flow statements such as "if a man had a dream it follows he was asleep" (p.50) which clearly contradicts the evidence presented above showing that a person in a hypnagogic-hypnopompic state can have a dream while retaining awareness of his environment, that is, while he is not asleep. He further states that "if anyone holds that dreams are identical with, or composed of, thoughts, impressions, feelings, images and so on... occurring in sleep, then his view is false" (p.52), and that it is impossible to establish that someone is aware of anything at all while asleep (p.58). What Malcolm is saying here is that dreams are not experiences. Of particular interest to my discussion is his assertion that dreams are not composed of images. But what are they composed of then? According to Malcolm, they are composed of nothing: "The statement 'I dreamt such and such' implies that such and such did not occur" (p.66).

Both Sullivan (1953, pp.331-332) and Malcolm (1967, pp.59, 66, 109) deny the possibility of 'experiencing' a dream. Sullivan (pp.331-332) asserts that "one never under any circumstances, deals directly with dreams. It is simply impossible. What one deals with... are recollections pertaining to dreams". Similarly, Malcolm (p.65) argues that "statements of the form 'I dreamt so and so' are always inferential in nature". Again, these statements fly in the face of evidence that dreams are experiences and that, as shown with hypnagogic dreams, they can be dealt with directly and not inferentially. That they are

immediate experiences and not inferences is very powerfully shown in nightmares where the person may wake up displaying all the physiological and psychological signs of fear and remain hypnopompically in the dream state for an appreciable space of time.

Malcolm further denies the occurrence of lucid dreams arguing that "the sentence 'I am asleep' no matter how respectable in appearance... [is] an inherently absurd form of words... the very notion of judging that one is asleep is unintelligible", "If 'I am dreaming' could express a judgement it would imply the judgment 'I am asleep', and therefore the absurdity of the latter proves the absurdity of the former... the idea of someone's making any judgment while asleep is unintelligible, and this result holds of course for the supposed judgment that one is dreaming" (p.109).

Again, these conclusions, no matter how validly they are arrived at, they are drawn from premises which are clearly not true. We have seen that people can and do have dream experiences in which they are aware of being asleep and dreaming. In the chapter on 'Psi' there are also presented reports of subjects who claim that they can see their physical body lying in bed asleep. One might, of course, argue that such reports are mere 'dreams', that a person dreamt that he was aware that he was asleep and therefore his judgments might be erroneous (see examples of lucid dreams within dreams reported above). But this possibility, too, is unjustifiably denied by Malcolm because "one who is asleep cannot make judgments and therefore not erroneous judgments" (p.112).

The question of judging or deciding that one is asleep and dreaming revolves round the presentation of criteria for the objective confirmation of the occurrence of such a judgment. As MacDonald (1953, p.205) pointed out, "it makes no sense to assert that one could employ any confirming technique in a dream. For one would but dream such employment". Nonetheless, some evidence is now emerging that the subjective awareness of dreaming can be confirmed by means of objective correlations. It has been shown



that sleeping subjects are able to communicate to an experimenter that they are having a (lucid) dream by clenching their fists or moving their closed eyes to a pre-planned pattern (e.g. La Berge 1980, 1981; Hearne 1981). That the subjects are indeed asleep at the time is attested by the "electrophysiological signs of unambiguous stage REM sleep" displayed throughout the experiences (Hearne 1981, p.9).

#### Similarities in their physiological correlates:

One of the defining physiological features of hypnagogia is the dominance of parasympathetic activity. This, however, is sometimes denied as a defining characteristic of REM sleep during which, as compared to NREM sleep, a certain increase of sympathetic arousal has been observed accompanied by an increase in peripheral inhibition.

The Hersch et al (1970) study, in which subjects injected subdermally with epinephrine during stage 4 sleep (NREM) reported more vivid, emotional and perceptual dreaming as opposed to controls where saline solution was used, suggests that a certain sympathetic arousal might be "a precondition which determines how a sleeper interprets impinging stimuli and memories", i.e. that sympathetic arousal is responsible for 'dreaming' as opposed to 'thinking' during NREM sleep. However, careful review of the results of other studies shows that the situation is not as clear as that. Snyder et al (1964) found that the increases in respiration, heart rate, and systolic blood pressure during REM sleep as opposed to preceding NREM sleep were only 7%, 6% and 4% respectively. Kamiya (1961) obtained similar results in a study on heart rates and respiration. Moreover, the Snyder et al study showed that respiration and heart rates tend to fall with successive REM periods of a night (although blood pressure tends to increase) during which periods REM mentation reports show more dreamlike quality. Interestingly, the above studies indicated "marked increases in the variability of autonomic indicators in the passage from NREM to REM sleep"

(Rechtschaffen 1973, p.175). The Baust et al (1971a, 1971b) studies showed that in the cat there is a decrease of sympathetic activity (reduction of reflex discharges of the cervical sympathetic nerve in response to both the sciatic nerve stimulation and to direct stimulation of the reticular formation) as the animal moves from wakefulness to NREM sleep, and a further decrease as it enters REM sleep (vagal responses decreased during NREM sleep and increased to wakefulness level in REM sleep). Rechtschaffen (1973, p.176) concludes that, bearing in mind the cat data, "during REM sleep there is not only a decreased tonic sympathetic discharge, but also a decreased sympathetic response to stimulation as well as phasic decreases in sympathetic activity in conjunction with bursts of eye movements".

Zimmerman (1967) found that light sleepers, i.e. subjects who were more easily wakened by an auditory signal than their opposite group, the heavy sleepers, were also (a) more aroused physiologically during sleep, that is, their heart, respiration rates, and body temperature levels were higher, they made more movements, had more spontaneous awakenings, and (b) when awakened from NREM sleep they reported more dreamlike experiences than their opposite group: 71% against 21% (Zimmerman 1970). From these findings Zimmerman deduces that a certain degree of physiological arousal is necessary for the occurrence of dreaming. This conclusion, however, may not be entirely valid since the personality factor seems to have been ignored, i.e., it is just possible that the light-sleeper group consisted of people whose physiological arousal during sleep was naturally higher than the other group's. If this higher arousal during NREM sleep is similar to that prevalent during REM sleep, it would be difficult to distinguish NREM from REM sleep in this group except by the temporal factor (NREM precedes REM), the EEG, and rapid eye movements. But none of these factors are absolutely necessary for the occurrence of dreaming as can be seen from the Foulkes and Vogel (1965) study where dreaming was reported during the hypnagogic stages with EEG ranging from alpha to theta (it even included stage 2 NREM sleep) and in the



absence of REMs (see also Singer 1976,p.48).

What seems to be overlooked in such cases is the subject-state interface, that is, the distinction between subject and state and their interactions. For instance, is peripheral inhibition during the various stages of sleep the same in all subjects? Evidence, including that afforded by the Zimmerman studies, suggests the opposite. The light-sleeper group's reports may mean that these subjects never reach deep peripheral inhibition as opposed to other subjects. But an organism in light sleep means that it is continually picking up more information from the internal and external physical environment than a member of the opposite group, from which we may infer that most, if not all, of the former group's dream experiences are translations and incorporations of physical stimuli.

It is of importance to know both the content of the sleepers' dreams and their cognitive state during these experiences. Some types of dream experience may require greater peripheral inhibition than others, and the cognitive state accompanying them may also differ. There must surely be cognitive and experiential differences between having a dream that has apparently been instigated by physical stimuli and one that has not. It would be enlightening to hypnotically induce dreams of varying bizarreness and personal involvement while also varying, through hypnotic instructions, the subject's physiological activity. We might find, for instance, that some subjects are capable of having exceedingly bizarre dream experiences accompanied by little or no physiological arousal, whereas in others the slightest change in mental content may be accompanied by considerable physiological changes. It would then be reasonable to hypothesize (and test by experiment) that the latter group may also differ from the former in their lightness of sleep. An interesting implication flowing from this suggestion would be that in 'dissociated' states, including stages of hypnagogia, the so-called dissociation is not restricted to the cognitive-experiential area but extends to a dissociation of physiological parameters, which means that inferences about physiological correlates

of mental states drawn from measurements taken during the organism's wakefulness may not hold during a 'dissociated' state, that is, the physiological activities of an organism in a 'dissociated' state may themselves be dissociated in the sense that their increases or decreases may not have the same meaning for the organism as they have in wakefulness and that they cannot be taken syndromically to stand as correlations of a mental state.

Such arguments need not, however, deny the possibility that in hypnagogia as well as in sleep dreams the subject may become more aware. Increase in awareness, that is, should not be confused with physiological arousal. The presence of the latter during hypnagogia and sleep dreams may signify one or the other of two things: first, it may be a mere reflection, an effect, of an increase in internal awareness; second, it may constitute an optimal physiological state conducive to the occurrence of such activities. What it does not imply is a causal connection pointing from physiological arousal to the experience of a dream. Moreover, the magnitude of arousal is relative to the immediately preceding state of the subject. For instance, if a person has been busy 'thinking' in the NREM stage his arousal may need to decrease as he enters the REM stage, and vice versa, if he has been very quiet in NREM sleep his arousal may need to increase. This may also explain the occurrence of apparitional phenomena reported as taking place immediately after waking but while the person is still in the hypnopompic state (see Chapter 11). That is, the process of waking, just like sleep onset, may provide the level of physiological arousal conducive to the experiencing of such phenomena. But this is not even half of the story. The most crucial part is played by the mental state of the subject, viz., his psychological readiness to have the experience. Conversely, when, after a considerable decrease in sympathetic arousal, the person engages in imaginal activities, the latter may then be reflected in measurable sympathetic increases. These however, to extend Aserinsky's (1965) suggestion in respect to the nonspecificity of REMs, may only reflect very coarsely



the fact that something experientially important is happening in the organism. Clearly, the identity or difference between two mental states is not established merely by the identity or difference between two sets of 'corresponding' physiological 'criteria' (Staal 1975, p.106). As Kamiya (1965, pp.155-6) pointed out, "under conditions of extreme sleep deprivation, the EEG can indicate 'deep sleep' when the subject is awake, at least by the usual standards — talking, responding to instructions, etc.... Such dissolution between behaviour and the EEG can also be produced pharmacologically or surgically" (see also Oswald 1960).

In the case of hypnagogic visions (early stages), where the cortex has not yet relinquished its control, the bizarreness of mentation and visual associations taking place are often seen by the subject as such, i.e., bizarre, whereas in REM or 'nocturnal' sleep where the neuronal reorganization — the switch from cortical to sub-cortical control, as will be argued in later chapters — is more complete, the bizarre is accepted as normal. Such reorganization is clearly evident in the later hypnagogic state which appears to be similar to the REM stage of sleep not only in its EEG and imaginal activities (i.e., hypnagogic dreams) but also in other respects.

Hypnagogia is shown to be more sensitive to small changes in both the external environment (Ornitz et al 1967, Fruhstorfer and Bergström 1969, Fruhstorfer et al 1971) and the internal one (physiological and psychological) than wakefulness. Similarly, when the organism is in REM sleep autonomic responses such as increase of heart rate are elicited at lower threshold levels than those of wakefulness although the sleeping organism does not appear to be subjectively aware of them. The magnitude of autonomic response in REM sleep is also greater than that of NREM and wakefulness. In respect to heart rate the latency for the response during wakefulness is longer than during REM sleep (Hord, Lubin and Johnson 1966). Moreover, stimuli below waking threshold to which the organism responds

do not lead to habituation (Johnson and Lubin 1966; Ornitz et al 1967). However, due to the neuronal reorganization these cues cannot be interpreted the same way they would when the organism is awake: the logic and organization of the representations are not the same.

Interestingly, Davis and Zerlin (1966) pointed out, in respect to the increase of cerebral responsiveness to auditory stimuli (recorded as averaged evoked responses: AERs) during the late hypnagogic state, that the late components of the AER seem to represent a central neural process or response related to change of state rather than a direct channel for sensory input (Ornitz et al 1967, p.340). The new organization tending more towards the imaginal than the perceptual all sensations and internal reactions (e.g. autonomic) are represented imaginally; at the same time, the increased magnitude of responses to physiological stimuli give us some idea of the involvement of the subject in the ongoing imaginal activities, i.e., the imaginal takes on the appearance of the real as the subject becomes absorbed in it, and the importance he attaches to it is of greater magnitude than that dictated by waking logic. It would appear that the organism is not unresponsive to stimuli when in either the hypnagogic or sleep-dream states but rather that the method of interpretation of these stimuli (its epistemology) as well as the 'interpreter-cognizer' (its metaphysics) are changed. This is partly evidenced by reports of changes in hypnagogia such as distortion or complete loss of body schema, falling or flying, seeing things from impossible angles, having a feeling that the things being seen are more 'real' than everyday reality. The deeper the hypnagogia the more bizarre the content, more difficult to control it, more tenuous or strange the associations.

#### Some general remarks:

Comparisons between hypnagogia and REM sleep show how difficult it is at times to distinguish between the two. Indeed, as Foulkes and Vogel (1965) discovered,



hypnagogia contains mentation every bit as dreamy as that of REM sleep. Arguments pointing out dissimilarities in the quality of mentation and ego involvement (degree of consciousness or loss of it as compared to waking consciousness) seem to be unaware of (a) that sleep is a complex and variable state (if not a number of states) just as complex and variable, if not more, as wakefulness (Rechtschaffen 1973), and (b) that hypnagogia, too, is by no means one simple state but a complex one containing within it steps and stages. In this respect, one can find in hypnagogia full blown dreams indistinguishable from REM dreams, whereas in its early stages one encounters mentation not at all dissimilar to that of NREM sleep. For instance, Rechtschaffen (1973, p.160) notes that "NREM mentation resembles that large portion of our waking thought which wanders in seemingly disorganized drifting, nondirected fashion whenever we are not attending to external stimuli or actively working out a problem or daydream"; precisely the kind of mental activity encountered during the early hypnagogic stages. On the other hand, the hypnagogic physiological syndrome is not throughout exactly that of REM stage sleep. This is probably due to the fact that hypnagogia on the whole (excepting its latest stage) still retains a certain amount of qualitatively waking consciousness, i.e., the switch to the new neuronal reorganization has not been completed, and this might account for the absence of some components of the REM sleep syndrome. The graded structure of hypnagogia may, further, account for the variability of content, intensity, feeling of reality/unreality, cognitive attitude, etc., reported by subjects (see chapter 4).

An interesting parallel between the stages of hypnagogia and those of sleep (2, 3, 4 and emergent 1) can be drawn along the dimension of vigilance, the later stages of both states being characterized by deep inhibition of vigilance accompanied by intense dreaming. In the case of sleep, Hernández-Peón (1965) showed that strong doses of acetylcholine injected in either of the two sleep areas proposed by Jouvet (1961) elicited REM sleep, while weaker

doses elicited NREM sleep, thus suggesting that sleep stages may be related to the degree of inhibition of the vigilance system with REM sleep lying at the deep end (Giora and Elam 1974). In respect to hypnagogia, although a similar experiment has not been reported in the literature, it is clear from the evidence presented in this paper that inhibition of vigilance increases with successive stages of hypnagogia and deeper involvement in the unfolding imaginal activities (i.e., hypnagogic dreams).

Another dimension that can be used in studying hypnagogia in relation to the stages of sleep is that of utilizing the concept of "mental effort". The continuum as well as the continuity of consciousness are, clearly, guaranteed by the untenability of a hypothesis proposing a sharp dichotomy between consciousness and unconsciousness: such dichotomy is simply logically unobtainable. The continuum of consciousness can be graded according to the mental effort exerted. Giora and Elam (1974) remind us how Bergson (1901, 1902) introduced the concept as an essential part of his dynamic theory of perception, viz., that perception is the end product of an interpretative process. Giora and Elam while endorsing Bergson's contention that dreams are products of cognition of low mental effort, they further suggest that NREM mentation is of higher mental effort than the REM kind as evidenced by its 'thinking' quality. The same parallel is applicable to the early and late hypnagogic stages. Reports in the literature stress again and again how 'autonomous' hypnagogic visions are and how a slight effort of will dissipates them. While mental effort is very weak or lacking the clearly defined sought-for schemata of wakefulness may either fail to appear altogether or appear distorted, but in either case they call forth subliminal mediate associations, i.e., associations which are often hard to see as such, lacking, as they do, in obvious clues and giving the impression of irrelevance. It would appear that in hypnagogia (and sleep) a swing from dynamic cognition (mental effort) to an associationistic imaginal mode takes place. The evidence in the literature strongly suggests a change from active to passive



cognition during the hypnagogic state. The same is, of course, known to be the case in respect to sleep-dreams.

In reference to Johnson and Lubin's (1966) indication that the upper brain stem and the lower brain stem respectively may be responsible for the storms of electrodermal activity during NREM sleep and the observed paucity of such activity during REM sleep, Rechtschaffen (1973,p.171) remarks that "these hypotheses suggest that major rearrangements of excitatory and inhibitory activity along the neuroaxis, such as occur with sleep, can alter the relationships between peripheral indicators and mental activity that obtain during wakefulness". The discovery of the PGO spikes in the cat (Jouvet, Michel and Courjon 1959; Mikiten, Niebyl and Hendley 1961; Mouret, Jeannerod and Jouvet 1963) and periorbital phasic integrated potentials (PIPs) in man (Rechtschaffen et al 1970; Rechtschaffen 1973) appear to implicate the brain stem in behavioural wakefulness and sleep. The Jouvet (1967) studies suggested that the locus caeruleus in the lateral dorsal region of the pons is implicated in the production of REM sleep whereas the raphe system which is 'linked' to the RAS, hypothalamus and limbic forebrain, is implicated in the production of REM sleep. (Although the contention that there are two separate loci for the production of the two kinds of sleep, is disputed, (see Hernández-Peón 1965), there is agreement that the above mentioned brain areas are implicated in the production of sleep as a whole).

Now, PGO spikes in cats and PIPs in human subjects are phenomena of sleep and are closely correlated with dreaming. Interestingly, spikes in the lateral geniculate nucleus (the G in PGO) are also observed in wakefulness, but here they follow upon eye movements as opposed to sleep where they appear before the eye movements (Delorme, Jeannerod, and Jouvet 1965). We also know that the lateral geniculate nucleus acts as a relay of visual sensations travelling along their neural pathway from the eye to the visual cortex. These last two observations may appear to point to the lateral geniculate nucleus being a common pathway for both visual perception and visual imagination conveying perceptual information inwardly and imaginal information outwardly. The temporal relationship of the geniculate spikes to eye

movements appears to suggest this possibility. However, the neural generator of the PGO spike is thought to be located in the pons (perhaps related somehow to the giant reticular neurons whose activity is known to increase prior to the appearance of PGO spikes and REMs and stay on the increase as the latter two decrease and come to a halt) suggesting visual imaginal activity (image formation, association of imagery, visual interpretation) as well as mentation, brain-stem driven, and thus perhaps accounting for the qualitative differences between waking thought processes and mentation during dreams and dreamy states. This is not to argue that other areas of the brain are inactive during dreams and deep dreamy states (see Hobson and McCarley 1971 on the increase of neuronal firing in various parts of the brain in conjunction with spikes) but that (a) the orders for firing seem to be issued not from the cortex but from the brain stem, and (b) cortical neuronal activity (in addition to the occipital cortical activity in PGO) although considerable is not necessarily, or all of it, of the same organization as that taking place during wakefulness (This might constitute an affirmative 'theoretical' answer to Rechtschaffen's (1973, p.189) question as to whether the bizarreness or unreality of dream mentation associated with PIPs results from the loosening of associative connections).

As Proust once observed, in this pre-sleep state there is introduced "some form of reasoning formally contradicting the laws of logic and the evidence of the present". Mayer-Gross (1929, quoted by Vihvelin 1948, p.375) also remarked that "the mental processes in this state of complete passivity are so radically different in nature from the directed thinking of the waking state that not even the experienced self-observer can succeed in describing them", i.e. describe what goes on during a hypnagogic experience. Both Froeschels (194) and Rapaport (1967b), it will be recalled, suggested that the rules of association in hypnagogia are radically different from those operating in the formation of thought during wakefulness. Froeschels (1949, p.24) argued that there is a certain laziness in thought



formation during hypnagogia. More to the point, he remarked that the term 'similarity' being the basis upon which the hypnagogic consciousness works, has a different meaning in hypnagogia from the meaning it has in waking consciousness: in the former it is identified with 'sameness'. Rapaport (1967b, p.39) states that the syntactical importance of the sentence during wakefulness is replaced by what is "psychologically outstanding" during the hypnagogic state.

Indeed, the various experiential changes that come over the organism as it enters and goes deeper and deeper into hypnagogia (flickers, flashes, myoclonic jerks, sound explosions, etc.,) may be likened to a country's change of constitution and government: waking consciousness which exercises control over certain physiological and psychological functions withdraws to allow for reorganization. Different neurons are now firing, and although some of the patterns may still be similar to the old ones, their interpretation is not the same: the organism is 'state-bound' and cognizes according to the rules of the new state. Perhaps this is why sometimes confusion is created in trying to differentiate between EEG descending stage 1 (hypnagogia) and EEG emergent stage 1 REM sleep (see Johnson 1970; also Evarts 1962, and Evarts et al 1962). As Roffwarg et al (1966) remarked, "it is intriguing that the REM sleep EEG is remarkably similar to that of a subject awake under circumstances of visual imaging or stimulation, when alpha activity is blocked". Snyder (1969) too, pointed out how EEG during REM sleep "closely resembles the somewhat slower and random pattern found in the initial transition from waking to sleep" (the hypnagogia, that is). Since Johnson's (1970) paper many writers have expressed doubts "whether EEG activity in awareness and in sleep depicts the same mental functions" (Giora and Elam 1974, p.283). As Johnson (1970) pointed out, similar EEG patterns may not come from the same generator (and, therefore, may not have the same significance for the organism). As suggested above in respect to PGO spiking, the type and control of mentation during hypnagogia and sleep appears to be

predominated by brain stem activity (probably by a limbic shift too, as some correlations of hypothalamic activity — especially temperature — seem to indicate), which further suggests that EEG activity during these states must have a different meaning for the individual in them from that ascribed to a person in a waking state.

#### Summary and conclusions:

In this chapter I have discussed the phenomenological and physiological relationships between hypnagogic experiences and nocturnal dreams. The following points have been argued:

First, the experiences of the hypnagogic-hypnopompic state can be full-blown dreams comparable in all respects to nocturnal dreams.

Second, hypnagogic experiences may take place while the subject retains some awareness of his environment and/or awareness of being 'awake' in a dream.

Third, there being a variety of dream states the hypnagogic experiential span may include anyone of them, i.e., hypnagogia may encompass a variety of types of dream; in addition, it encompasses "inter-dormitum" experiences.

Fourth, hypnagogia appears to share most, if not all, the physiological parameters of the nocturnal dream-state.

Fifth, these parameters may form part of a specific neuronal reorganization peculiar to dream states and be related to brain structures below the cortical level; as such, they may carry a different significance for the organism than that ascribed to them in wakefulness.

Sixth, the evidence that a person may retain consciousness of the fact that he is having a hypnagogic dream argues against the view expressed by some philosophers that dreams are not experiences, i.e., that they do not contain, or are not composed of, thoughts, feelings, and images, and that statements about them constitute inferences about experiences that did not actually take place.



## CHAPTER 10

### MEDITATION:

In respect to meditation and its relationship to hypnagogia it would promote clarification and facilitate comparison if I began by noting the features of the traditional eight stages of Patanjali's 'Yoga Sutras' (e.g., Vivekananda 1955; Mishra 1967). The stages are: yama, niyama, pranayama, pratyahara, dharana, dhyana, samadhi. The first four stages deal with the reduction of psychophysical distraction — the first two are concerned with the quietening of emotions and desires, and the latter two with the reduction and elimination of exteroceptive and proprioceptive 'noise'. The fifth cultivates and deepens psychophysical withdrawal: attention is detached from sensorial input and psychological concern with the environment. The sixth stage involves concentration of attention on an object or image for a certain period of time. Whereas in this stage attention may be allowed to fluctuate within the confines delineated by the features of the object or image, in the seventh stage (dhyana: often translated as 'meditation') attention is further limited within the object or image and concentration is of a longer period. Finally, in samadhi there is a continuous maintenance of attention which "is said to be 'absorbed' in the object and there is a dissolution of subject-object differentiation which is associated with an experience of transcending space-time" (Honorton 1977, p.438). Patanjali called the last three stages Samyama and said that in practising them a yogi acquires siddhis or paranormal powers.

On the physiological side, this tuning out of the environment and turning of the attention inwards (psychological withdrawal) is correlated with significant decreases in oxygen consumption, heart rate and blood lactate, and increases in skin resistance and EEG alpha rhythm activity (e.g., Wallace 1970; Wallace et al 1971; Wallace and Benson 1973). Moreover, as Anand et al (1961) showed, advanced yoga meditators display a progressive slowing of the

dominant alpha frequency and an absence of response to photic stimulation (i.e., they show no alpha blocking). Significantly, Kasamatsu and Hirai (1963, 1966) reported a typically hypnagogic progression of EEG in their experiments with Japanese Zen masters: first a continuous alpha rhythm was observed followed by a decrease in alpha activity towards the alpha-theta range which eventually gave way to pure theta. This progression, as we know (see "Physiological correlates"), is correlated with decrease of ventilation (e.g., Bülow 1963) and a switch from abdominal to thoracic breathing (Timmons et al 1972) — an observation which, as we shall see below, is pointed out by van Dusen (1975) in his study of Swedenborg's meditational practices; it is also known that manipulation of breathing constitutes an essential part of some forms of yoga. Gastaut (1969, p.42) wondered whether meditation is not "a pre-hypnagogic state which does not progress to sleep". In fact the view that meditation is hypnagogic in nature is strongly supported by evidence that even trained meditators appear to fall asleep during their practices (see e.g. Wada and Hamm 1973; Younger, Adriance, and Berger 1975; Pagano et al 1976). Bagchi and Wenger (1959, p.142) speculated that "meditation may represent a twilight state in which stimulus-response reflex probably functions...below the cortical level" (my underlining).

Referring back to my very brief sketching of Raja Yoga stages, it will be observed that both the physiological switch to parasympathetic activity as well as the psychological withdrawal are necessary features of hypnagogia. Indeed, the first five stages of Patanjali's yoga are none other than the hypnagogic factors of psychophysical relaxation and withdrawal: only, they are induced consciously and deliberately instead of occurring spontaneously. It will also be remembered that absorbed attention leading to fascination, wherein contemplation or reflective thinking is inapplicable, is a distinctive mark of the advanced stages of hypnagogia. In meditation, however, as in



hypnosis, attention is 'focused' on an object or image instead of being merely defused as in hypnagogia: it is, nonetheless, not focused analytically, that is, it is not directed to analysing or dissecting the object or image but merely attending to it. Perhaps the term 'focused' should not be employed at all in this state of affairs since the attending of the meditator is primarily used as a means for maintaining withdrawal and intensifying single-pointed concentration.

It is of interest to note that "it is axiomatic in most branches of mysticism and occultism, that the ego — or the conscious mind, or the cortex of the brain — is the 'dragon in the way'. 'The mind is the slayer of the Real. Let the disciple slay the slayer'" (Regardie 1979, p.102: my underlining). Regardie (1979) also notes that during meditation there occur body alterations, numbing of parts of the body, buzzing, tinglings all over the body, dizziness, lightheadedness, pulsations of energy flowing from head to toe, a wonderful sense of ease and release (pp.102, 105). Significantly, he notes that as certain sounds become internally audible "the mind becomes fascinated by them, being drawn to them irresistibly..." (p.101: my underlining).

Van Dusen (1975) writing on Swedenborg, says:

Since childhood Swedenborg had a personal practice that happens to be one of the ancient Hindu Yoga and Buddhist ways of enlightenment.... He would relax, close his eyes, and focus in on a problem with total concentration. At the same time his breathing would nearly stop. Awareness of the outer world and even bodily sensation would diminish and perhaps disappear. His whole existence would focus on the one issue he wanted to understand.... The problem he was concentrating on would blossom out in new, rich and surprising ways.

(van Dusen 1975, pp.19-20).

Swedenborg (1742) himself refers to his method of concentration as "a kind of passive potency" which, van Dusen (1975, p.21) explains, "is an attentive receptiveness as in meditation".

Of the hypnagogic nature of meditation van Dusen writes:

In meditation, first the mind wanders off.... The effort to call the mind back sets up an internal

split: the person trying to concentrate and a host of other odds and ends appearing. The observant person may be beguiled into one of these mental perambulations only to find later that he wandered off into a dream and sleep. Zen monks doing this same sort of thing sit up with eyes fixed on a spot to prevent sleep.

(van Dusen 1975, pp.23-24).

He goes on to explain that

Next the observer learns to watch inner processes. Much that disturbed the meditator earlier was the first surfacing of these inner processes. The observer watches feelings, ideas, faint images, words, sentences, and later whole scenes come and go. He is watching mental processes occur spontaneously. It is common that the observer, seeking inner events, overreacts upon seeing or hearing something. This overalertness tends to knock out the spontaneous processes emerging from the psyche, which are delicate and faint at first. A balance needs to be learned between the responding observer and spontaneous phenomena that turn up. At this level the original meditation has deepened into the hypnagogic state.

(van Dusen 1975, p.24: my underlining).

The observation in the above quotation that overalertness tends to put an end to the process points clearly to the receptive attitude required for its maintenance and to the learning to balance oneself in this state — arguments put forward earlier in my analysis of the necessary conditions required for the induction, prolongation and exploration of hypnagogia. More important, van Dusen argues that meditation is hypnagogic, i.e., that it tends to lead into sleep, and that it often does so if the meditator does not take the appropriate steps to prevent it. As we saw above, with Patanjali's Yoga, the earlier stages of meditation are clearly hypnagogic, that is, the meditator having brought about a state of deep physical and mental relaxation, and having withdrawn psychologically from his environment, he places himself at the point of falling asleep — and this is the point also made by van Dusen. However, van Dusen appears to argue that sleep is prevented by a prolongation and intensification of hypnagogia, that is, instead of allowing hypnagogia to play its literal role in this series, i.e., lead into sleep,



it is seized and dwelt upon and prevented from developing into a state of sleep: it turns into a state of trance. Van Dusen sees a natural series in these processes: meditation, hypnagogia, trance. Indeed, the series may be viewed as a deliberate hypnagogic induction which, prevented from its natural tendency to lead into sleep, leads instead via trance to the final stage of meditation, samadhi or enlightenment. "In the trance", van Dusen (1975, p.25) explains, "inner experiences are no longer delicate and faint, but are clear, intense and real. Personal awareness still exists, but bodily awareness is less or lost altogether.... Suddenly there is a feeling of intensified consciousness but a paralysis of the body".

It would seem obvious that, (a) given the data we have on hypnagogic dreams, and (b) bearing in mind earlier arguments on internal attention states in hypnagogia (in particular, absorption and fascination), trance — at least the kind or stage referred to here — is nothing more than an intensified and deepened hypnagogia and the experiences therein hypnagogic dreams.

In his experimental studies of meditation, Deikman (1963, 1966), adapting a procedure from Patanjali's Yoga, instructed his subjects to adopt an attitude of "passive abandonment" as they concentrated on a blue vase. His instructions ran:

By concentration I do not mean analysing the different parts of the vase, or thinking a series of thoughts about the vase, or associating ideas to the vase; but rather, trying to see the vase as it exists in itself, without any connections to other things. Exclude all other thoughts or feelings or sounds or body sensations. Do not let them distract you, but keep them out so that you can concentrate all your attention, all your awareness on the vase itself. Let the perception of the vase fill your entire mind.

(Deikman 1969a, p.201).

Again, these instructions can be recognized as directions for psychophysical withdrawal and diffused and absorbed attention which, as we saw earlier, are marks of hypnagogia. The instructions to attention and concentration can be seen as directions for the deliberate induction of a state

of fascination that presents itself spontaneously in hypnagogia, and can be further prolonged and deepened in the latter by attending and concentrating on the imagery. The relationship between hypnagogia and meditation becomes even closer when the object of concentration is an internal image, such as the visualization of a blue vase. In the latter case, instead of the subject becoming fascinated by emerging hypnagogic imagery, as is the case with hypnagogia, the procedure is reversed and an image is visualized and used to fascinate the subject. As Deikman (1969b, p.29) points out, "the active phase of contemplative meditation is a preliminary to the stage of full contemplation, in which the subject is caught up and absorbed in a process he initiated but which now seems autonomous, requiring no effort. Instead, passivity — self-surrender — is called for, an open receptivity...". This would lead, as we saw with hypnagogia, to an increase in the vividness of the image, to its acquiring of self-like qualities, and to its becoming 'chemically' related to the subject — all characteristic changes reported by Deikman's subjects in his experiments on meditation (see also Deikman 1971, p.484).

Deikman (1969a) reports that as meditation progressed stimulus barriers were developed which cut out of the subjects' attention extraneous sensations. Certain individual phenomena were also reported by some of the subjects, such as: merging with the object of attention; inability to organize perceptions, i.e., everything, both in the foreground and background, seem to "clamour for attention at an equal intensity, resisting visual organization"; the environment exhibited "a kind of luminescence"; one subject reported "a sense of falling, of emptiness, of loneliness and isolation as if she were in a vacuum. Her sudden realisation that there were absolutely no thoughts in her mind made her anxious and she searched for thoughts to bring her back". Deikman (1971, p.484) interprets these changes as part, or the result, of "a 'deautomatization', an undoing of the usual ways of perceiving and thinking due to the special way that attention was used. The meditation exercise could be seen as withdrawing attention



from thinking and reinvesting it in percepts - a reverse of the normal learning sequence". He borrows the concept from Gill and Brenman (1961) who explain that "Deautomatization is, as it were, a shake-up which can be followed by an advance or a retreat in the level of organization" (ib., p.178). Given that hypnagogia is also a form of deautomatization its study might furnish us with insights into the mental processes occurring in mentally abnormal subjects, e.g., schizophrenics, as well as in creative individuals, depending on which direction conceptual and other organization leads after the "shake-up" (this might also depend on the set and setting under which the experience unfolds: see relevant chapters).

During meditation a percept or image is attended to to the exclusion of everything else, and "attention for abstract categorisation and thought is explicitly prohibited... the active intellectual style is replaced by a receptive perceptual mode" (Deikman 1969b, p.31). The resulting deautomatization is thought to be "a shift toward a perceptual and cognitive organization characterized as 'primitive', that is, an organization preceding the analytic abstract intellectual mode typical of present-day adult thought" (p.31). Deikman (p.33) notes both that the perceptual and cognitive changes that occurred in his subjects were consistently in the direction of a more "primitive" organization, and that the phenomena reported fulfilled completely Werner's (1948) criteria of the functioning of imagery when the latter has not yet become an instrument in reflective thought whereby of necessity it loses its sensuousness, fullness of detail, colour and vivacity. Werner's studies of the imagery and thought in children and people of primitive cultures revealed that these are "(a) relatively more vivid and sensuous, (b) syncretic, (c) physiognomic and animated, (d) dedifferentiated with respect to the distinctions between self and object and between objects, and (e) characterized by a dedifferentiation and fusion of sense modalities" (Deikman 1969b, p.31). It is significant to note that these features are also present in hypnagogia, and may thus relate, through the

latter, the mystical with the primitive. They also link with my earlier discussions on regressivity, and in later sections they will be correlated with oldbrain activities, thus arguing for the placing of hypnagogia, the primitive, and the mystical at a very early stage of evolution.

Although this might not seem all that original at first sight, its explicit argumentation would bring out empirical and philosophical issues in respect to the actual function of these states — and of hypnagogia in particular — and enable us to make inferences as to the possible structure of the environment and of human needs, capacities, and mental attitudes and modes of experience in the remote past.

The attitude of renunciation adopted by many religious meditators is sufficient, Deikman (1969b) argues, to produce deautomatization. In addition, he points out that the long-term practice of meditation may create temporary stimulus barriers producing a functional state of sensory isolation. From my viewpoint, it might be argued that hypnagogic induction (a) is an implicit renunciation both of the external world and of the intellectual, rational or 'cortical' kind of thinking, and (b) psychological withdrawal as an important feature of hypnagogia produces a similar functional state of sensory isolation (the relation of sensory isolation to hypnagogia is discussed in more detail in Chapter 14). In fact, most manuals on meditation suggest it should be practised in quiet and darkened surroundings to assist psychological withdrawal. Indeed, religious hermits, as the word itself indicates, are people who withdraw physically and psychologically from the external world, and in the East some even wall themselves up in caves thus cutting out completely visual and auditory stimulation — a practice clearly conducive to hypnagogia.

Relevant to the study of hypnagogia are what Deikman (1969b, pp.35-43) proposes as the five principal features of the mystic experience; (a) intense realness, (b) unusual sensations, (c) unity, (d) ineffability, and (e) trans-sensate phenomena.

The first feature is an intense feeling of reality



that, for the individual, attests the truthfulness of the experience. Significantly, Deikman (ib., p.36) argues that in meditation "(a) the feeling of realness represents a function distinct from that of reality judgment, although they usually operate in synchrony; (b) the feeling of realness is not inherent in sensations, per se; and (c) realness can be considered a quantity function capable of displacement and therefore of intensification, reduction and transfer affecting all varieties of ideational and sensorial contents". Although the themes of reality sense and reality judgment are discussed in some detail in chapters 17 and 18, it may be noted at this point that this very same kind of feeling is not only also found in hypnagogia — especially in the late stages, where it sometimes fools the subject to the extent of taking his imagery as unfolding in the objective world (he loses his ability for reality testing, he hallucinates or dreams) — but is often reported as occurring in schizophrenia and nocturnal dreams where, in the latter, it 'spills over' into wakefulness carrying a hypnopompic awareness that blends and confuses dream reality with waking reality.

During perceptual and cognitive deautomatization, Deikman (1969b) argues, "the quality of reality formerly attached to objects becomes attached to the particular sensations and ideas that enter awareness". In this process "stimuli of the inner world become invested with the feeling of reality ordinarily bestowed on objects. Through what might be called 'reality transfer', thoughts and images become real" (1969b, p.36). These statements are of particular importance in the study of hypnagogic imagery and mentation as they might explain how in full or partial deautomatization in hypnagogia a variety of experiences take place ranging from raised sensitivity to external stimuli (Arnold-Forster 1921; Ornitz et al 1967) to the reduction and fading out of this sensitivity through reorientation (psychological withdrawal; decrease of cortical activity; increase of oldbrain activity) leading to full or partial investment of attention in internal activities. If realness is a quantity function, as Deikman proposes,

then its variable presence might throw some light on the range of phenomena occurring in hypnagogia, and in particular the phenomena of partial and full dissociations appearing in this state.

In Part 1 of this paper we saw how the sense of reality experienced in respect to hypnagogic imagery may range from (a) the awareness that imagery is vivid but not real (e.g., Maury 1848) to (b) the awareness or belief that it is just as real (e.g., the hearing of one's name being called), to (c) the conviction that it is true and objective to the exclusion of the physical reality (e.g., hypnagogic dreams). The sense of reality in (a) and (b), as we have already seen in relation to contemporaneous reporting of the experience, places the subject in a state of double-consciousness, and (c) may lead to dissociation. Realness itself might be a function of a decrease of cortical and increase of sub-cortical activities. If rational thinking and interpretation of the environment are cortical activities, then, as we shall soon see in some detail, mystical experiences are clearly not cortical (at least not in the same sense), and the same will be true of hypnagogic experiences. Cortical activity, as we know it, is differentiating, analysing, and interpreting. By contrast, in (b) and (c) above, and in the late stages of meditation, none of these activities are possible — images and thoughts are either just as real as the normally perceived physical environment or they are the only real 'objects' around. Rationality (cortical activity) imposes a barrier between the subject and the world; but the sense of reality per se is 'irrational', distinct from reality judgment, as Deikman put it, i.e., it is not dependent on reality judgment — indeed, it might be argued that any form of judging tends to reduce the intensity of the feeling of reality with which hypnagogic (and mystical) experiences are endowed. The fact that mystical experiences are often described as "infantilism" or "return to Adamic Innocence", i.e., to a stage prior to the maturation and predominant use of the cortex, and the description of hypnagogia as "regressive" point to the same direction, that is, to the



predominance of oldbrain activity. The mental and neuro-physiological processes by which realness is increased, decreased, or reoriented, and whose study might facilitate our understanding of numerous normal, abnormal and para-normal behaviour and cognitive attitudes (e.g., normal perception and cognition, epileptic and schizophrenic mentation, psi experiences) are, it will be argued in later chapters, to be found in practically all their variations in hypnagogia.

In reference to the second principal feature of the mystical experience, that of unusual percepts, Deikman says that many of these phenomena can be understood as representing an unusual mode of perception rather than an unusual external stimulus. He quotes part of the report of one of his subjects who experienced a strong sense of motion and a shifting of light and dark during the experiment: "Now when this happens", the subject reports, "it's happening not only in my vision but it's happening or it feels like a physical kind of thing. It's connected with feelings of attraction, expansion, absorption and suddenly my vision pinpointed on a particular place and ... I was in the grip of a very powerful sensation and this became the centre" (ib., p.37). Another of his subjects reported "... when the vase changes shape ... I feel this in my body and particularly in my eyes... there is an actual kind of physical sensation as though something is moving there which recreates the shape of the vase" (Deikman 1966b, p.109). In both of these reports the kind of 'chemical' relationship between subject and object discussed earlier as occurring in hypnagogia during the processes of internalization and empathy, is clearly present. With regard to the first report Deikman (1969b, p.37) suggests that "the perception of motion and shifting light and darkness may have been the perception of the movement of attention among various psychic contents (whatever such 'movement' might actually be). 'Attraction', 'expansion', 'absorption', would thus reflect the dynamics of the effort to focus attention — successful focusing is experienced as being 'in the grip of' a powerful force".

There are two points worth noting in the above statement: First, that Deikman's interpretation of the experience of "attraction", etc., as reflecting the dynamics of the effort of attention is very similar to Silberer's (1965, pp.199-200) "functional (effort) phenomena" encountered in hypnagogia. These are defined by Silberer as the "autosymbolic experiences which represent the conditions of the subject experiencing them or the effectiveness of his consciousness... they have to do with the mode of functioning of consciousness (quick, slow, easy, difficult, relaxed, gay, successful, fruitless, strained, and so on)". Second, that the subject's description of being in the grip of a very powerful sensation points to a state of absorption and fascination very similar to that taking place in hypnagogia: Deikman's interpretation of being "in the grip of" a powerful force as the experience of successful focusing of attention points to the same state of fascination. In respect to the second report, quoted above, Deikman says that this "subject might have experienced the perception of a resynthesis taking place following deautomatization of the normal percept; that is, the percept of the vase being reconstructed outside of normal awareness and the process of reconstruction was perceived as a physical sensation". He refers to this hypothetical perceptual mode as "sensory translation" and defines it as "the perception of psychic action (conflict, repression, problem solving, attentiveness, and so forth) via the relatively unstructured sensations of light, colour, movement, force, sound, smell or taste" (Deikman 1969b, p.37). He relates this concept to Silberer's autosymbolic phenomena but points out that it differs in its referents and genesis:

In the hypnagogic state and in dreaming, a symbolic translation of psychic activity and ideas occurs. Although light, force, and movement may play a part in hypnagogic and dream constructions, the predominant percepts are complex visual, verbal, conceptual, and activity images. 'Sensory translation' refers to the experience of nonverbal, simple, concrete perceptual equivalents of psychic action.

(Deikman 1969b, p.37).



It is debatable, however, whether Deikman's description of hypnagogic contents as "complex" is justified — in fact, he is cautious enough to qualify this description by the use of the adjective "predominant". As we know from the study of the phenomenology of hypnagogia many people experience sensations of falling, drifting, swelling, sinking, flickering or flashing light, swirling clouds of colours, explosions of sounds etc. Whether these too are to be seen as autosymbolic phenomena, as van Dusen (1972) tentatively suggests, does not preclude them from also being translations of psychic activities, or indeed of being the actual 'inner' perceptions of such activities. If a point of difference is to be made between the experiences of Deikman's subjects and those of hypnagogists is that in the former the meditators were concerned with the perception of an external object whereas in the latter, once psychological withdrawal has been achieved, the subject is involved in the 'internal perception' of imagery. This difference, as we shall see, changes character when the object of meditation is an internal image instead of an external object. If the subject in meditation were to begin with an inwardly turned attention directed at an internal image, "sensory translation" might then appear in the familiar hypnagogic forms of ideoretinal light, swirling colours, drifting, falling, etc. It would be an oversimplification, and at the same time an oversight, to argue that all functional autosymbolic phenomena must be of a complex nature. We must bear in mind that Silberer's observations were carried out under conditions of (a) drowsiness and (b) effort to think. But if the second condition is not present, as it is the case both in meditation and in the 'normal' hypnagogic process, then the presence of attention which is both non-analytic and does not seek an object outside the subject, may be experienced as a series of 'simple' kinesthetic, visual, auditory, and other sensations such as drifting, shifting, expanding, flashes of light, explosions of sound.

An important point to be borne in mind here is that the 'chemical' relationship between the subject and object

may enable the subject to so internalize the properties of the object as to experience them 'in himself': alternatively, in this state of consciousness the subject's thoughts, intentions, etc., towards the object-image may be experienced as kinesthetic and quasi-sensorial perceptions of alterations of attention. A shift of awareness to another object-image would, in this respect, also be felt in a similar manner, that is, as a pulling away from the first image (or the image receding from the subject) or as a movement towards the second image (or the second image becoming enlarged and/or moving towards the subject). An extreme example in the opposite direction would be the termination of this absorbed state of attention by a sudden and loud sound: the subject would then feel this sound internally, literally in his gut (which is, incidentally, an indication of how non-analytic and deep attentional states may be related to the 'visceral brain').

In addition, since there must be some form of correlation between psychological and physiological states or processes, it may not be at all improbable that some of these quasi-perceptual experiences of "sensory translation" might be, as Leary (1964, pp.330-339) argued in respect to hallucinogenic drug experiences, a "direct awareness of the processes which physicists and biochemists and neurologists measure", that is, cellular and electron activities which may collectively (in groups) correspond to psychological processes. However extreme in scope and speculative this idea might seem *prima facie* it might not sound all that unlikely when seen in its proper perspective. This could be achieved if we allowed ourselves to view hypnagogic images as a conglomeration of 'solidified' electromagnetic waves which, in the last analysis, they must be. Whether we are indeed dealing with the emerging into consciousness of a personal subconscious or a universal unconscious, we are faced with experiences which are compounded of fluidic impressions, intuitions, feelings, certainties, awareness of significance, and more 'objectified' (turning into object-based experiences) images. "The contents of conscious experience", as Koestler (1974, p.58) observed,



"have no spatio-temporal dimensions; in this respect, they resemble the non-things of quantum physics which also defy definition in terms of space, time and substance". The comparison may be more literal than metaphorical. Hypnagogic visual images have been observed by many researchers both to form themselves out of specks and clouds of what is argued to be ideo-retinal light and to dissolve again into it. It has been pointed out (Leaning 1925) that these observations must have taken place at those stages of the hypnagogic/hypnopompic state nearest to ordinary wakefulness. This implies that the deeper a subject is involved with hypnagogic experiences the less likely he is to observe their possible ultimate speck-like nature. It remains, of course, debatable whether the 'specks' are indeed of ideo-retinal origin.

Experiments in electrical stimulation show that imagery can be elicited by stimulating deeper parts of the visual pathways (optic nerve) and other areas of the brain. Although it can still be argued that electrical stimulation may, in its turn, lead to ideo-retinal stimulation and thus present the subject with schemata appearing in the retina, two problems need to be solved, namely, (a) that many subjects 'miss' the specks and clouds and report only seeing defined objects, and (b) that if ideo-retinal light is involved it must be shown (i) how images can be moulded out of this substance and projected in front of the subject not only when his eyes are shut, but, more importantly, when open, and (ii) that the images arise simultaneously in both eyes and are thus not only moulded and projected simultaneously in both the eyes but also that they are perceived binocularly. A further argument in respect to the last point would be that, even if the eyes were shown to converge when the subject is seeing an image, an explanation has still to be found in order to account for both the fact that the whole of a hypnagogic picture is seen in sharp focus and yet has depth, and its illumination is non-directional. But, if we bear in mind the indication that specks and clouds are seen at the stages of entering and coming out of hypnagogia, and if we remind ourselves of

the states of consciousness a subject is in (a) as he enters and exits hypnagogia and (b) as his attention is more deeply drawn when in a deeper hypnagogic stage (as he becomes fascinated), we might then be able to appreciate how consciousness itself may perceive 'thought substance' now as specks and clouds and now as more object-like imagery. The more one becomes involved (absorbed) in hypnagogic imagery the greater it exhibits emergent properties, the more it unfolds into further activity. Conversely, as one observes it analytically it disintegrates into specks and disappears. In physics, as Koestler (1974, p.52) reminds us, "the more accurately the physicist is able to determine the location of an electron... the more uncertain its velocity becomes; and vice versa, if he knows its velocity, the location of the electron becomes a blur".

It may thus be argued that both in meditation and in hypnagogia the subject may find himself, due to the prevailing attentional state, in the position of being able to experience (a) the shifting and qualitative changes of attention as kinesthetic and quasi-perceptual sensations and (b) the actual electrochemical and electromagnetic activities in his body sometimes as specks and clouds of colour and some other times as object-like images. (In respect to (b) one of Leaning's (1925, p.152) correspondents - Prof. Romaine Newbold - stated that "two or three times I have caught glimpses of what I took to be the convolutions of my own brain". On one occasion he saw "something like a starfish, but the arms were but slender threads springing from projection of the central body.... Both the centre and the arms glowed with brilliant light, like that of a full moon... I recognized it instantly as one of the 'giant starshaped cells' of the nervous system,... A thrill of excitement went through me - and instantly all disappeared". The same correspondent also reported that he frequently experienced flashes of light and explosions of sound before falling asleep).

But these arguments are, of course, in no way to deny other aspects of hypnagogic imagery, such as its symbolic nature and its connection with other types of imagery.



Both in hypnagogia and in meditation the human entity is presented with multi-sociations and multi-level organizations of internal activity some of which, e.g., electrochemical activity and symbolic imagery, appear incongruous to the waking mind. For instance, the concept of a symbol as a picture, an act, a sound, etc., that stands for some other thing or things (pictures, ideas, emotions, etc.) is open to more than one interpretation. By this I do not simply mean that a symbol can be made to stand for, or is interpreted as standing for, different things, but that it may correspond to different things at different levels of organization in much the same way that steam and ice are different aspect-states of water, that is, they correspond to, or represent water (H<sub>2</sub>O) in different states. In a similar respect strong correlations between psychological and physiological events or processes may enable them to stand as 'symbols' to each other. Moreover, a human entity may be able, as argued above, to switch its perspective from one series of aspect-symbols or organizations to another, or, as in meditation and hypnagogia, it may perceive-cognize two or more organizations simultaneously.

As Deikman (1969b, p.38) points out, the 'illumination' mystics talk about may be more than just a metaphor, it "may be derived from an actual sensory experience occurring when in the cognitive act of unification a liberation of energy takes place, or when a resolution of unconscious conflict occurs, permitting the experience of 'peace', 'presence', and the like". The notion of energy being liberated during hypnagogia is also a view held by occultists (e.g., Baker 1980), and it may be explained in respect to this state as the result of relaxation, of the "letting go" of tension produced by the intense application of the active mode (see also Trömmner 1911). Deikman states that

sensory translation may occur when (a) heightened attention is directed to the sensory pathways, (b) controlled analytic thought is absent, and (c) the subject's attitude is one of receptivity to stimuli (openness instead of suspiciousness)... the general psychological context may be described as perceptual concentration. In this special state of consciousness

the subject becomes aware of certain intra-psychic processes ordinarily excluded from or beyond the scope of awareness.

(Deikman 1969b, p.38).

However, as noted earlier, the presence of condition (a) may not be required when the object of attention is an internal image, and in the case of hypnagogia attention becomes absorbed in the emerging imagery while the latter two conditions are already present. But it must be reiterated that "sensory translation" as defined by Deikman may not be present throughout hypnagogia which includes other, more complex, experiences of autosymbolic phenomena and perseverations, memories, novel imaginal constructions, etc.

Deikman discusses his third principal feature of the mystic experience, that of unity, in the light of three hypotheses, viz., as regression, as the perception of one's own psychic structure, and as the perception of the real structure of the world. The first has been discussed above. The second, which has also been discussed in relation to the second principal feature of the mystical experience, argues that if "the actual substance of the perception is the electrochemical activity that constitutes perception and thinking" then "the contents of consciousness are homogeneous" and therefore the idea and the experience of unity would "constitute a valid perception in so far as it pertained to the nature of the thought process". In other words, one would be experiencing one's thought processes as electrochemical activity without the intervening sensations-and-associations-of-memories from which one infers the nature of the stimulus — and this would constitute an experience of unity. In contrast to this 'solipsistic' hypothesis, the third theory argues for a "perceptual expansion" resulting from a reversal, or temporary suspension of, the learned automatization operating in the individual since his infancy and responsible for the selection of some stimuli and stimulus qualities to the exclusion of others (Werner 1948; von Senden 1960; Shapiro 1960). Deautomatization would thus permit aspects of reality that



were hitherto blocked from awareness to become accessible.

As argued above and earlier in this paper, the first and second hypotheses may stand as good explanatory notions of various stages of hypnagogia and are not mutually exclusive. The third hypothesis also provides useful explanatory concepts and acts as a qualifier to the theory of regression: in addition, it relates to Deikman's fourth feature of the mystical experience, that of ineffability.

Interestingly, Deikman (1969b, p.40) distinguishes between three kinds of ineffable mystical experience. The first kind "is probably based on primitive memories and related to phantasies of a preverbal (infantile) or nonverbal sensory experience... very suggestive of the prototypical 'undifferentiated state', the union of infant and breast". This is a "regression in thought processes" brought about by renunciation and contemplative meditation a main effect of which is functional sensory isolation that contributes to an increase in recall and vividness of such memories (ib., p.40; see also Suraci 1964). The ineffability of these memories may be due to the fact that the normal adult mind is conditioned by "categories (schemata) of memory which are not suitable vehicles to receive and reproduce experiences of the quality and intensity typical of early childhood" (Schachter 1959, p.284; quoted by Deikman 1969b, p.40). The relevance of these phenomena to hypnagogia lies in three sets of hypnagogic features: (a) the abandoning of analytic thought and the return, or reorientation, of the subject to an earlier mode of cognition, (b) the intensification of this earlier mode due to fascination, (c) the experience of comfort, security, and conviction. In this state of non-analysis, fascination and conviction, the hypnagogist's experiences may be ineffable in two senses: firstly, in that, if they are of infantile origin, they are probably unstructured, and secondly, as argued in an earlier section, they may not be remembered due to fascination and the inability to rehearse-memorize the experience.

The second kind of ineffable mystical experience is very different from the one above in that its ineffability

may be due to the "revelation" being too complex to verbalize. As James (quoted by Deikman 1969b, p.41) put it, "states of mystical intuition may be only very sudden and great extensions of the ordinary 'field of consciousness'" going beyond verbalization. This type of experience is also often reported as taking place both in drug-induced states and in hypnagogia (e.g., Poe 1949, Sherwood 1965, van Dusen 1972, Wambach 1979). The experience is "a revelation of the significance and interrelationships of many dimensions of life", the subject "becomes aware of many levels of meaning simultaneously and 'understands' the totality of existence". Although it is not to be argued that all hypnagogic experiences are of this kind it is doubtless the case that some hypnagogic/hypnopompic experiences are of this nature as we shall presently see.

Deikman, in agreement with Ehrenzweig (1964), proposes that in this state of consciousness "a new 'vertical' organization of concepts" takes place, that is, an organization of the non-linear 'logical' kind which permits interrelationships of extensive, and normally entirely unrelated, and diverse schemata such as are encompassed, for instance, in a treatise on the molecular properties of water, a James Bond novel, the structure of a modern urban society. This view is similar to the one I expressed above in respect to my interpretation of symbolism. The notion of "vertical" organization of concepts may account for the apparent 'irrationality' of statements made by mystics, psychotics, LSD-users, hypnagogists, and creative individuals (e.g., Kepler's association of the phases of the moon with the tides). In respect to hypnagogia, many reports emphasize the "irrelevancy" of one image to the next, the synesthetic relationships among data of different sense modalities, the apparently unjustified feelings of conviction in regards to seemingly unrelated ideas, the 'solution' of problems which may or may not hold true in the light of later analysis.

The third kind of ineffable mystical experience Deikman relates to his fifth principal feature of the mystical experience, viz., the trans-sensate phenomena, in which "the experience goes beyond the customary sensory pathways,



ideas, and memories": although "filled with intense, profound, vivid perception" the experience is "unidentifiable, hence indescribable". Deikman maintains that such experiences are the result of the operation of a new or undeveloped or unutilized perceptual capacity responsive to dimensions of the stimulus array previously ignored or blocked from awareness (p.42), and that "the meaningfulness, and the intensity reported of such experiences suggests that the perception has a different scope from that of normal consciousness", that it is not associated with reflective consciousness, loss of 'self' being characteristic of the trans-sensate experience. Ehrenzweig (1964, p.382) argues that "owing to their incompatible shapes [these images] cancel each other out on the way up to consciousness and so produce in our surface experience a blank 'abstract' image still replete with unconscious fantasy". This "full emptiness" is encountered in hypnagogia as a strong sense of realness, certainty, and conviction.

Van Dusen (1972, p.104) suggests that the deepest level of hypnagogia "is a kind of satori or enlightenment. Suddenly the questioner and the answerer are one. This one breaks into infinite images of all its representations. The individual awakens as though from a trance, puzzled by what was suddenly seen and experienced". Poe (1949) said of his hypnagogic images that

[they] have in them a pleasurable ecstasy, as far beyond the most pleasurable of the world of wakefulness, or of dreams, as the heaven of the North-man theology is beyond its hell. I regard the visions, even as they arise, with an awe which, in some measure, moderates or tranquillizes the ecstasy — I so regard them, through a conviction (which seems a portion of the ecstasy itself) that this ecstasy, in itself, is of a character supernal to the human nature — is a glimpse of the spirit's outer world; and I arrive at this conclusion — if this term is at all applicable to instantaneous intuition by a perception that the delight experienced has, as its element, but the absoluteness of novelty. I say the absoluteness — for in these fancies — let me now term them psychal impressions — there is really nothing even approximate in character to impressions ordinarily received. It is as if the five senses were supplanted by five myriad others alien to mortality.

(Poe 1949, p.543).

On the hypnopompic side, Sherwood (1965) writes:

I have sometimes come back to consciousness with great reluctance, still exhilarated with an inspired poem I am reading, the last strains of which are still ringing in my ears. The lines are too lovely and important to be lost and I make frantic efforts to retain them through the mists of returning consciousness. Perhaps I succeed, yet, when they are examined in the cold light of day, I am blankly astonished to find that all virtue has gone out of them. The lovely fragment is meaningless although my other self was so lately moved by its rarity to something approaching ecstasy.

(Sherwood 1965, p.90).

Wambach (1979), reporting on the work of some fellow psychologists, says that

when their subjects were hooked to biofeedback machines, and were registering between zero and four cycles per second, they were unable to recall when they awoke what they had said. They had been 'asleep'. But when they were questioned when in this deep state, they often reported mystical insights. It seemed that in this deep state material could be reached that was not normally available to the conscious mind.

(Wambach 1979, pp.16-17).

A wider understanding of the occurrence of these "mystical insights" in hypnagogia might, perhaps, be achieved if we took a closer look at what might be called the mystical attitude and the mystical epistemology. If we look at Zen Buddhism, for instance, we learn that it "aims at changing the experience of a person to that particular view of himself and the world which is called 'enlightenment'" (Deikman 1971, p.485). This end is achieved by an attitude of non-striving, non-analysing-categorising, non-separateness (non-mindedness, as Suzuki, 1969, would put it) which a Zen monk would cultivate by regular and prolonged meditation practices and in everyday life. The concept of a separate self exemplified in the application of the striving "action mode" is gradually and deliberately abandoned. Whether this is viewed as a return to the unity of a Universal Unconscious or a leap into a Superconscious its achievement would require the explicit or implicit assumption, present in one form or another in all kinds of personal abandonment, that nothing can go wrong because



there is nothing to go wrong in the first place. This attitude of "letting go" is, as we have seen a receptive mode attitude, and this shift in functional orientation is an essential pre-condition for the occurrence of hypnagogia and a necessary condition for its prolongation or introduction to sleep. There is here the important absence of fearful concern for the Future: the mystic's aim is to demolish both the concepts of space and time and live (in whatever sense 'living' is to be understood in this state) in the Present. This analysis might partly explain the sense of spatial and temporal immediacy with which hypnagogic experiences are generally endowed: as in the mystical experience, hypnagogia calls for the abandoning of spatial and temporal concern, and, as images appear, the released personal concern (a concern we carry about with us as somatic and psychological 'schemata', i.e., as a collective schema of the 'self') becomes reinvested in the imagery which then acquires a "self-like quality".

It is interesting to note that two of W. James's (1975) four defining marks of mysticism, viz., transiency and passivity, are also shared by hypnagogia. In addition, his description of a five-fold gradation of mystical experience includes the "sudden feeling which sometimes sweeps over us of having 'been there before'", or the *déjà vu* experience, which, as we shall see, is significantly correlated with hypnagogic phenomena (Buck and Geers 1967) and even argued by Ellis (1897) to be a regularly occurring phenomenon in hypnagogia itself as a form of paramnesia. Also interesting and very relevant to my discussion is W.T. Stace's (1960, 1973) approach to mysticism in which he makes the pertinent distinction between the mystical experience per se which is genuine and authoritative, and the interpretation given by mystics which "may be either true or false". This is an important marker also shared, as we saw earlier, by the later stages of hypnagogia. We shall see in the chapters on "Schizophrenia" and "Creativity" how hypnagogia may throw light, by means of its accompanying awareness of significance and the feeling of certainty, on both schizophrenic and creative mentation,

distinguishing between the two by the ability or inability of the subject to interpret the experience — and test it in the light of 'waking' consciousness — as "true or false".

The fully developed mystical experience, Stace (1973, p.232) tells us, "when projected onto the logical plane of the intellect involves three things, viz., 1. that there are no distinctions in the one, 2. that there is no distinction between object and object... 3. that there is no distinction between subject and object". Whilst hypnagogia generally falls short of the fully developed mystical experience it is clearly the case, as we saw in the section on "Internalization", that diffused and absorbed attention tends to lead to a weakening and dissolution of distinctions between subject and object, and external objects. In the same respect, viz., that of diffused and absorbed attention wherein rational analysis is unobtainable, we can see relationships between hypnagogia and mystical states as the latter are described by various mystics. For instance, in one of his sermons Eckhart (Organ 1975, p.174) writes that "if you are to know God divinely, your own knowledge must become as pure ignorance, in which you forget yourself and every other creature". In the "Cloud of Unknowing" (Wolters 1977, ch.43) we are told that "contemplation in its perfection" is only achieved "when all other things and activities have been forgotten (even your own)" and self-awareness is relinquished ("contemplation" is here clearly used not in the same sense employed earlier by Sartre to convey a differentiating, analytic, attitude, but in the opposite sense of pure abstraction).

Don Juan, in Castaneda's (1976) "Tales of Power", distinguishes between two main modes of perceptual activity and experience: the Tonal and the Nagual. The former corresponds to the rational consciousness whereas the latter can neither be described nor made to fit any known intelligible cognitive mode: it can only be hinted at. In the Nagual "there are no thoughts involved; there are only certainties" (ib., p.197). On one occasion don Juan says to Castaneda: "You want to explain the nagual with the tonal. That is stupid.... You know very well that we



make sense in talking only because we stay within certain boundaries, and those boundaries are not applicable to the nagual" (pp.186-7). Here, as in hypnagogia, the presence of certainty renders reflective thinking unobtainable: a state of affairs asserts itself and the hypnagogist, the mystic, or, in the case of don Juan, the sorcerer, knows, in a 'fascinated' manner, that state of affairs to the exclusion of alternatives. Moreover, don Juan's insistence on not using the tonal type of experiencing to describe the activities of the nagual suggests a similar distinction to that of the active and receptive modes and may thus further enable us to obtain an insight into the paralogical mentation of hypnagogia in so far as it suggests that the logical rules of the tonal (active mode, waking consciousness?) may not be applicable within the nagual experience, that is, it suggests not a dissolution of consciousness but an organismic reorientation to a different kind of reality.

Mystics in general talk of the existence of more than one reality. Koestler (1954) refers to three orders of reality: the perceptual, the conceptual, and the mystical —the second pervading the first, and the third all-pervading. Sri Aurobindo (1949) distinguishes between matter, life, mind, and supermind or mystical mind. Castaneda talks of the tonal and the nagual. In the Vedas we come across two levels of truth: "the lower level is the empirical level of everyday experience, while the higher level is reserved for the Absolute" (F. Staal 1975, p.42). Staal (ib., p.43) quotes the Advaita philosopher Vidyanaranyana who says in regard to Maya (appearance): "Maya is understood in three ways: by the man in the street as real, by the logician as undeterminable, by the follower of the scripture as non-existent".

Without making the same high claims for hypnagogia one might, however, argue for a different reality wherein different rules are applicable. In hypnagogia, as in a mystical state, if we try to make 'objective' sense of the experiences (or utterances) we may end up by either considering them unintelligible or allowing that they may

hold good in some 'other' kind of reality. But, it is doubtful whether we can truly hold that we are able to clearly and definitively draw the limits of intelligibility. In classical logic, for example, the law of the excluded middle is a valid part of the system; but in some logics, e.g., Brouwer's intuitionistic logic, this law is no longer valid. What is unintelligible according to one system may be clearly intelligible in another (cf. Bunge 1962). In the words of Suzuki (1974, p.79), "to understand it [the Zen experience] one must have the experience, and at the same time there must be a specially constructed logic... to give to the experience a rational or an irrational interpretation. The fact comes first, followed by an intellectualization". In the fully developed mystical experience intellectualization can only take place in what Underhill (1955) has called the "afterglow", a state in which the mystic finds himself immediately after the actual experience and which is like a reverberation of the experience. In hypnagogia this resembles Poe's (1949, pp.543-4) startling himself into wakefulness and then analysing the experience having recollected what took place during the experience itself.

The problem of comprehending both the hypnagogic and the mystical experiences is, however, twofold. It is not merely the case that one must first have the experience and then reason about it, but also that the experience itself often appears to equip one with the ability to 'think' in a way that seems to transcend common rationality, i.e., a 'right' kind of reasoning seems to be integral to the experience itself. What kind of reasoning this might be was hinted at by Aristotle (Mylonas 1974, p.262) who said of the initiates in the Eleusinian Mysteries that they not so much acquired knowledge (propositional knowledge) from the Mysteries as 'suffered', 'felt', and 'experienced' "certain impressions and psychic moods" that led to their becoming perfected and 'fulfilled' (τετελεσμένοι). A main difficulty in discussing the status of hypnagogia and adjacent states (including the mystical) is not only that the experiences appear to unfold in a 'universe of discourse'



which has rules different than those of everyday waking consciousness, but, most importantly, that the meaning and use of these rules seem to be different, that these experiences carry in themselves both their own reasoning and method of verification (see section on 'Internalization'). In this respect, A.J. Ayer's (1977) saying, for instance, in reference to mysticism, that "so long as there is no intelligible proposition before us, there is nothing to discuss" may simply be an irrelevant argument since "intelligible proposition" implies an epistemological methodology which is, if my analysis is correct, inapplicable in these states. (An interesting suggestion made by Staal (1975, p.62), and which will be developed subsequently in relation to hypnagogia and adjacent states, is that, perhaps, what we now think of as exceptional mystical states were once (historically and psychologically) the normal states, that "consciousness appeared first as what is now called the mystical state of consciousness").

Crichton-Browne's (1895) lectures on "Dreamy mental states" may shed some extra light on the present discussion especially as they bring together phenomena and states of consciousness encountered in mysticism, mental illness, and creativity. For instance, Crichton-Browne cites a personal account of the Renaissance historian J.A. Symonds who reports:

Suddenly in church or in company, when I was reading, and always, I think, when my muscles were at rest, I felt the approach of the mood. Irresistibly it took possession of my mind and will, lasted what seemed an eternity and disappeared in a series of rapid sensations which resembled the awakening from anaesthetic influence. One reason why I disliked this kind of trance was that I could not describe it to myself. I cannot even now find words to render it intelligible. It consisted in a gradual but swiftly progressing obliteration of space, time, sensation, and the multitudinous factors of experience, which seems to qualify what we are pleased to call ourself. In proportion as these conditions of ordinary consciousness were subtracted, the sense of an underlying or essential consciousness were subtracted, the sense of an underlying or essential consciousness acquired intensity.... The apprehension of a coming dissolution, the grim conviction that this state was the last of the conscious self, ... stirred, or seemed

to stir, me up again. The return to ordinary conditions of sentient existence began by my first recovering the power of touch.

(Crichton-Browne 1895, pp.74-75).

It is of importance to note that Symonds' "mood" was preceded by muscular relaxation and an inward turning of attention. Also, his comparison of the ensuing state to that of "anaesthetic influence" points to the presence of a paralytic numbness and loss of body awareness: the return to the ordinary waking state was, likewise, marked by the return of tactile sensations and the re-establishment of body schema boundaries (see also Isakower 1938 on this). But, unlike a mystic, or a normal hypnagogist, Symonds fought the experience: he was apprehensive of a coming dissolution and an ending of the conscious self, he disliked "this kind of trance" because he could not describe it to himself. Elsewhere (ib., p.75) he exclaimed: "I wish and I cannot will; I cannot concentrate myself on an end of action". Symonds is here clearly unwilling to accept a naturally occurring shift in functional orientation (which takes place spontaneously in normally occurring hypnagogia, and is deliberately induced in meditation) thus setting the two modes against each other, viz., the active mode against the receptive.

In a similar vein, Deikman (1971, p.486) points out that the onset of many cases of acute schizophrenia is preceded or marked by mystical experiences. This, he argues, is probably due to the abandoning of a desperate struggle and "a sudden, sharp and extreme shift to the receptive mode". But, again, unlike the mystic whose long training has prepared him for the experience, and the hypnagogist who normally enters hypnagogia gradually (and whose state of alertness and cortical activity is usually relatively subdued), the psychotic is neither prepared nor equipped for it. "In the case of acute mystical psychosis", Deikman (p.486) argues, "a crucial rejection of life impasse triggers a collapse of the action mode and a sudden rush of receptive mode cognition and perception ensues for which the person is unprepared and unsupported". This "shift to the receptive mode may arouse great anxiety and a compensatory attempt to control the receptive mode



experience, an attempt that is an action mode response" (p.487). Similarly, in respect to hypnagogic trance, van Dusen (1975, p.25) argues that "in contrast to the capable seeker who deliberately enters a trance, the psychotic usually does not seek and cannot control the eruption of this material into awareness.... The difference is an impaired ego, not understanding or wanting these processes". The abandoning of oneself to "ego death" as Deikman points out, is what a mystic is trained to do and a schizophrenic finds most difficult. Likewise, as van Dusen (1972) noted, full entrance into hypnagogia, and a prolongation and exploration of this state, require the absence of fear of ego loss: a difference between normal hypnagogia and the mystical state, in this respect, lying in the implicit lack of fear of ego loss in the former, and the explicit seeking of ego dissolution in the latter.

## CHAPTER 11

### PSI:

Although an early study by Warcollier (1921) did not show significant psi achievement during the hypnagogic state, and Leaning's (1925) survey revealed no significant correlations between the incidence of hypnagogic imagery and crystal visions, more recently Krippner (1970) and Panati (1975) suggested that hypnagogia is significantly conducive to paranormal events, and Carrington (1975) argued that developing psychics experience an increase in hypnagogic phenomena. Green and Green (1978) reported the occurrence of spontaneous psi events in relation to their hypnagogic practices. Schacter and Kelly's (1975) study of ESP in hypnagogia with two subjects showed "insignificant positive deviations from chance" although one of the subjects consistently showed "qualitative correspondence to the target material". Honorton and Harper (1974) and Braud, Wood, and Braud (1975) obtained significant psi results in hypnagogic-ganzfeld studies. Both Leaning (1925) and Edmunds (1968) suggested that hypnagogic visions might be an early form of clairvoyance, and O.H. Myers (1957) posited that one type of visual hypnagogic imagery might be precognitive, i.e., constituting knowledge of an event before the latter takes place.

The word 'psi' is commonly employed as an umbrella term to encompass all kinds of so-called paranormal phenomena. It is used in this chapter, and throughout the paper, in reference only to telepathy, clairvoyance, clairaudience, psychometry, out-of-the-body experiences (OOBEs), and some forms of trance as a term of convenience. In what follows I shall argue that psi states and hypnagogia are related in their respective psychophysical induction, phenomenology, and the conduciveness of hypnagogia in the production of psi and, vice versa, the tendency of deliberate/experimental induction of psi states to become hypnagogic. I shall, further, discuss the presence of hypnagogic experiences in psi, religious, and mystical



events and view psi reports in the perspective of the subjects' set and setting. Finally, I shall return to this latter theme after a brief examination of some theoretical formulations regarding both psi and hypnagogic mentation. The veracity of psi phenomena will not be discussed.

Support for the existence of close relationships between psi and hypnagogia comes from the following sources:

- (i) the practices and literature of occultism and spiritualism (e.g., Edwards, undated; Roberts, undated; Carrington 1966, 1975, 1978; Butler 1968, 1973; Bennett 1973; Muldoon and Carrington 1965; Fox 1962; Ophiel 1961; Monroe 1974; Northage, undated; Baker 1980),
- (ii) the literature on controlled psi experiments (e.g. Sinclair 1930; Warcollier 1938, 1948; Garrett 1941, 1949, 1950; Tyrrell 1946; White 1964; Braud and Braud 1973, 1975a, 1975b; Green 1967, 1968b; Tart 1967, 1968; Mitchell 1973; Stanford and Mayer 1974; Honorton 1974; Braud 1975; Green and McCreery 1975; Altom and Braud 1976; Braud and Thorsrud 1976; Barker, Messer, and Drucker 1976),
- (iii) spontaneous cases (e.g., Arnold-Forster 1921; Green 1967, 1968b; Garrett 1941; van Dusen 1972; Warcollier 1938).

Confirmation of psi-hypnagogic relationships also comes from my own studies which encompass (a) interviews with psychics, (b) observations made at spiritualist development circles, (c) reports from two groups of 20 subjects each over two periods of 30 one-hour weekly sessions each during which they were instructed to relax in semi-darkness (sitting on chairs or lying on the floor) and be aware of any subjective psychophysical occurrences (e.g., physical sensations, images, quality of thought). All the phenomena of hypnagogia were observed in (b) and (c) and partly confirmed by (a). It is worth noting that in both (b) and (c) snoring was not an infrequent auditory phenomenon! thus demonstrating the hypnagogic nature of both conditions. In a similar respect, Leaning's (1925, pp.278-284) examination of crystal visions revealed that

these were phenomenologically indistinguishable from the hypnagogic type.

Psychophysical induction of psi:

Individuals involved in the production of psi, irrespective of their theories and beliefs as to the nature of psi phenomena, advocate psychophysical relaxation as the first step towards the induction of the psi-conducive state. Sinclair (1930) for instance, writes:

relax completely your mental hold of, or awareness of, all bodily sensation... Relax all mental interest in everything in the environment;... Drop your body, a dead weight, from your conscious mind. Make your conscious mind a blank... To make the conscious mind a blank it is necessary to 'let go' of the body; just as to 'let go' of the body requires 'letting go' of consciousness of the body.

(Sinclair 1930, pp.181-2)

Butler (1968, pp.46-48), writing on the conditions for developing clairvoyance, says that physical relaxation and emotional calm are of utmost importance. Roberts (undated, p.28) advises that the medium "should be freed of all worry and responsibility whilst the sitting is in progress. He (or she) should be allowed to fall into a trance, go to sleep, or simply rest". Similarly, Edwards (undated, p.9) writes that would-be psychics must learn to "place their minds into a condition of receptive abandonment" (see also Carrington 1966, p.31). Bennett (1973) notes that the best time and place to begin psychic training is "in bed at night" when one becomes naturally relaxed. Huson (1977, p.64) also instructs that "the ideal time...is before falling asleep at night, but not when you are overtired". Other investigators pointed out the need for psychophysical relaxation (Schmoll 1887, p.325), lack of inhibition (Barrett 1882, 1883, 1924; J.B. Rhine 1934, 1937), lack of self-consciousness (Tyrrell 1936), calmness (Dessoir 1886; Schmoll and Mabire 1888), "high carelessness" and placidity (Garrett 1941, 1950, p.230), lack of conscious interference (Carlson: cited by White 1964), inactivity and absence of expectation



(Heywood 1964, p.201; Le Shan 1973, p.38).

White (1964, p.27) identified the following five steps in the ESP process: (1) Relaxation, (2) Engaging the Conscious Mind, (2A) the Demand, (3) the Waiting, the Tension, and the Release, (4) The Way the Response enters consciousness. Steps (1), (2), and (2A) contain in essence the symptoms of what was later defined by Honorton (1974, 1977) and Braud (1975) as the psi-conductive syndrome.

Honorton's (1977, p.466) markers are " (a) a sufficient level of cortical arousal to maintain conscious awareness; (b) muscular relaxation; (c) reduction of exteroceptive input from peripheral receptors; and (d) deployment of attention toward internal mentation processes".

Braud (1975) proposes that the psi-conductive syndrome involves the following seven major characteristics: (a) physical relaxation, (b) decreased arousal, (c) reduced sensory distraction and increased concentration, (d) a more inward focussing of attention, (e) decreased action mode/left hemisphere functioning along with increased receptive mode/right hemisphere functioning, (f) an altered world view, (g) momentary importance of psi.

It can be seen that Honorton's model is here covered by Braud's (a), (c), and (d) features. Braud's fifth feature arguing for a close positive relationship between right-hemisphere functioning and receptive mode in the production of psi is debatable (see Stanford 1977, p.835, and a later section in this paper in reference to old-brain predominance in the production of hypnagogic and related phenomena). Braud's second feature, that of decreased arousal, although not specific enough appears to be pointing to a generally agreed-upon direction, a difference with some other workers lying in the specification that a moderate level of arousal or activation seems optimal for psi performance (see e.g., Morris 1976; Stanford 1977). Interestingly, when this ill-defined moderate arousal level has been further lowered, consciousness of the situation may become completely lost along

with the conscious ability to register an experience, i.e., the subject may drift into sleep. It is thus argued that the optimal low arousal level conducive to psi activities is one of deep relaxation (e.g., Braud and Braud 1973) accompanied by alphoid EEG (e.g., Stanford and Lovin 1970; Stanford 1971). Further, Honorton et al (1971) found positive psi correlations with the presence of (a) alpha EEG and (b) an "altered state" but not with either (a) or (b) alone.

Honorton et al's (1971) "altered state" may relate phenomenologically very closely with the hypnagogic awareness of significance, feelings of certainty, conviction, discovery, omnipotence (e.g., Hollingworth 1911). Further, Braud's (1975) last two features may be seen either as prerequisites to the induction of psi — in which case they may constitute the subject's set and setting — or as the cognitive-affective defining marks of the said "altered state" during a psi activity — in which case they may constitute the subject's mental set. It is only when we view them as prerequisites to a psi activity that they may present themselves as the, perhaps, only characteristics distinguishing many forms of psi from hypnagogic experiences.

Braud's (1975) features (c), reduced sensory distraction and increased concentration, and (d) a more inward focussing of attention, seem to overlap with White's (1964) step (2), that of engaging the conscious mind. However, a close look at these marks is called for as none of them appears to be explicit enough or clearly understood and agreed-upon by all subjects and workers. Moreover, an analysis of the mode of inducing and maintaining these marks may be seen to relate closely to hypnagogia.

In White's (1964) paper it is pointed out that the second step is induced or achieved by two apparently diverse methods viz., either by concentrating on a mental image until all perceptual, physiological and mental distraction is reduced or entirely prevented, or by making the mind a blank. For instance, Sinclair (1930, pp.186-87)



writes: "After you have practised the exercise of concentrating on a flower... Hold your mind a blank" (see also Carlson: in White 1964, p.30). Rush (1949, p.124) notes: "In receiving, J.H.R.'s practice was to clear his mind as nearly as possible of sensory distraction, frequently sitting in darkness, and then to stop the usual stream of rational 'daydream' imagery, thus creating a subjective blank screen upon which incoherent, unanticipated forms might take shape" (see also Dessoir 1886, pp.123-124; Lodge 1884, p.191; Rawson 1895, p.17; Schmoll 1887, p.325; Schmoll and Mabire 1888; Warcollier 1938, p.20; Barrett 1882; Usher and Burt 1909; Thomas 1905). White (1964, p.33) points out that both methods "accomplish the same purpose: to engage or distract the full attention of the conscious mind".

Summarizing the main features of Step Two, White (1964, p.32) says that these "seem to be lack of strain, passivity, a blank mental screen, persistence, and — paradoxically — concentration in one form or another". Concentration, however, is not of the active, analytic, kind but of the passive, or receptive type. As Sinclair (1930, p.179) points out, in ESP activities "a part of concentration is complete relaxation". Murphy and Dale (1943) further explain that

The apparent inconsistency,...between the value of concentration and the value of relaxation appears to stem from failure to specify what is concentrated, what is relaxed. The fact seems to be that the everyday attitude of perceiving is directed toward the immediate world of time and space to which we are normally adjusted, and unless one learns how to break this attitude, more concentration does nothing but focus the normal perception. Unconsciously, however, and without effort, one may be oriented toward events with which our normal perception is unable to make contact, and if this orientation is strongly motivated, contact may be established in another way — subconsciously — provided only that the conscious processes do not interfere.

(Murphy and Dale 1943, pp.13-14)

In contrast to Rhine's (1934) argument that "sleepiness" and "dissociative factors" lower ESP ability, many workers in the psi area have pointed out that "some of the

best telepathic cases seem to involve dissociation" (Murphy and Dale 1943, p.13). For instance, Gibson (1937) noted that during psi experiments his subject seemed to be in a semi-dissociated state. Similarly, Tyrrell (1938) reported that his subject was quite definitely aware of "almost losing consciousness of her surroundings". These observations are in agreement with the data on hypnagogia which show it to be characterized by the subject's fascination and absorption in ongoing imaginal activities. Germane to this discussion is my earlier exposition of similarities between hypnagogia and hypnosis. Further to this, Murphy and Dale (1943, p.13) also relate hypnosis to psi states of mind. Murphy (1944) remarks that dissociation, defined as "the cleavage or separation of mental connections" (p.8), "seems to be requisite to success in the exercise of the paranormal function" (p.10). The reason for this, he explains, may lie in the fact that dissociation provides the subject, as in hypnosis, with a freedom from the preoccupations of adjustment to the immediate world of time and space, the concern with the "here and now". He further notes that,

we may find, for some purposes, that the conditions of fatigue and drowsiness, or even of ill health, give us exactly that mechanical basis for dissociation which we desire,...and that the condition of falling asleep or of waking up gives sufficient dissociation, while permitting the individual to grasp more clearly, at the conscious level, the paranormal impression for which he has been reaching... In the records of spontaneous cases we find dozens of examples of very light sleep, or drowsiness, or transition states between waking and sleeping.

(Murphy 1944, pp.12-13)

In non-spontaneous cases, that is, in those cases where the subject deliberately sets out to induce a psi state in himself he typically concentrates relaxedly but exclusively on a mental image or thought such as a rose or blankness until a state of 'fascination' is achieved (cf. section on "Internalization", and chapters on "Hypnosis" and "Meditation").

For my purposes, in comparing hypnagogia to psi state(s) it is important to note that both methods for



the induction of Step Two involve psychophysical relaxation (muscular relaxation, lack of worry or concern with everyday "claptrap"), switch to parasympathetic predominance (as opposed to sympathetic or active muscular tension, etc.), psychological withdrawal leading to absorption and fascination. The latter feature is induced, as we saw in earlier sections, either by deliberate concentration on a particular mental image (as in 'Meditation') or by allowing oneself to become absorbed in a spontaneous hypnagogic image: in either case the subject is 'fascinated' and cognizes in the receptive 'paralogical mode'. Significantly, this state is clearly hypnagogic both in phenomenology and in the fact that it tends to lead into sleep. For instance, Sinclair (1930, pp.184-185) instructs: "After you have practised the exercise of concentrating on a flower — and avoiding sleep — you will be able to concentrate on holding the peculiar blank state of mind which must be achieved if you are to make successful experiments in telepathy" (my underlining). White (1964, p.33) summarizes: "A stage must be reached where the image takes on a life of its own and can be held effortlessly in a consciousness where all intruding influences have been successfully eliminated". Warcollier (1938, pp.222-223) more specifically says: "This concentration [on a mental image] brings a tendency to fall asleep;... It is not a question of merely thinking of a certain flower, but of seeing it appear inwardly as a hypnagogic image". (my underlining). We may remind ourselves that what Warcollier is saying here in regard to preventing oneself from falling asleep and, instead, intensifying one's internal attention state, is essentially what van Dusen (1975) says about meditation, and that when sleep is prevented the experience turns into an intensified hypnagogic state — often eventually leading into trance (see section on 'Meditation').

The presence of psychophysical relaxation involving "a mind-set which is characterized by 'allowing it to happen' with a minimum of ego involvement and conscious striving" (Honorton 1977, p.452) has been argued to be highly

conducive to psi activities (see e.g., Braud and Braud 1973, 1975b; Standford and Mayer 1974; Altom and Braud 1976; Barker, Messer, and Drucker 1976). Increased psychological withdrawal and internalized attention, identified on a scale of "state reports" (Tart 1970), have, also, been argued to correlate significantly with psi performance (Honorton, Drucker, and Hermon 1973; see also Honorton, Davidson, and Bindler 1971; Parker 1975). High "state reports" have been found to correlate significantly with hypnotic susceptibility (Tart 1971).

Of importance here is the actual attentional state of the psychic. As in hypnogogia, attention is receptive, and effort, commonly associated with the action mode (muscular tension, worry, etc.), reduced or eliminated. As Murphy (1944, pp.6-8) points out "by far the most important thing is not the actual emptying or blotting out of consciousness, but the development of devices for keeping attentive effort out of the picture. We need to develop, as it were, a 'clear space' within which the emerging impressions can move, so as to be quietly observed by introspection".

At this point some psychics, e.g., Carlson (White 1964) and Sinclair (1930), would "demand" that the appropriate picture or message appear to their consciousness. Most psychics, however, would not make the "demand" a separate step in their procedure but formulate their intention for the psi performance at the inception of the experiment and retain it diffusedly throughout the session. Nonetheless, at this point, White (1964, p.38) argues, a "tension is produced because the percipient is trying to straddle two opposites: consciously, he is concentrating exclusively on an image which he knows is not what he seeks, while simultaneously he is entertaining an awareness of a void, wherein lies the sought-for answer!"

There are two important points to be noted at this juncture. The first point relates to the attitude of the subject towards the target. Sinclair (1930, p.186) instructs: "Keep the eyes closed and the body relaxed, and give the order silently, and with as little exertion as



possible". Beyond this, White (1964) notes, one simply "hopes and waits". This is strongly reminiscent of (a) Leaning's (1925) remark that control of hypnagogic imagery is achieved not so much by "willing" as by "wishing", (b) McKellar's (1979a) hypnagogist who 'requested' the appearance of particular hypnagogic images, and (c) van Dusen's (1972) observation that one can enhance hypnagogia by entering into "conversation" with it. Delage (1903, p.245) spoke of waiting in hypnagogia "in a state of expectation to catch the images that might occur". Ardis and McKellar (1956, p.28) described the state of the hypnagogic subject as one of "alerted attention" as opposed to "close scrutiny", and Green, Green and Walters (1970) spoke of "detached effortless volition". In both, hypnagogia and psi states the subject must achieve and maintain a receptive attitude with the minimum of ego assertion (Eilbert and Schmeidler 1950; Stanford 1965, 1977; van Dusen 1972).

The second point rises from White's (1964) argument that (a) Step Three includes "tension", and that (b) this tension is the result of holding into one's mind both an 'irrelevant' image and an awareness of a void in which the sought-for answer eventually is to appear. In respect to (a) not all psychics speak of "tension". On the contrary, of all of White's quotations (pp.36-37) in respect to Step Three only one psychic, Carlson, and one investigator, Tyrrell, make reference to "tension". All the others (Richet 1889; Schmoll 1887; Schmoll and Mabire 1888; Sinclair 1930; Warcollier 1938) speak of "waiting patiently" and "expectantly" for a picture to appear. What is perhaps meant by "tension" under these circumstances might be better understood if we take note of Carlson's saying that this might be "equivalent to 'friction'" (White 1964, p.36). Now, "friction" is not necessarily "tension". It might, in fact, constitute the psychic's somesthetic sensation of internalization and absorption: an 'empathic' state reached after the initial relaxation, meditation, and psychological withdrawal. The same line of argument will also be directed against (b): the percipient's mind is not

tensed between an 'irrelevant' image and a void. What is probably happening here is that concentration on a mental image is employed to achieve psychological withdrawal, absorption, fascination — a singular narrowing of attention (Trömner 1911) hemmed in by internal and external stimulus barriers. Having achieved this degree of internalization one then simply waits receptively avoiding falling asleep. If some form of 'tension' is to be accepted as being present here this might be the result of waiting, when the latter, due to the non appearance of the desired target, becomes long and sometimes tedious (e.g., Richet 1889, p.68). For those who aim at "blinking" directly without the intermediary of a mental image, there can clearly be no presence of tension as proposed by White.

In the above we can see that the psychological state reached so far by the psi percipient is essentially that of hypnagogia which has been (a) deliberately induced, and (b) prevented from reaching sleep — instead, it becomes internally intensified resulting in a state of light trance wherein the percipient almost loses consciousness of the surroundings (e.g., Tyrrell 1938, p.108; see also next section). It will also be remembered that, in analysing hypnagogia in the section on 'Internalization' it was indicated how the hypnagogist having drifted into the receptive mode can, and often does, enter into an absorbed and fascinated empathic state with his hypnagogic imagery and thus become active within the receptive mode. We also saw in another section that stage three of hypnagogia is characterized by loss of reality testing (hypnagogic dreaming) and further lowering of the EEG frequency. It is thus obvious that 'acting' within the receptive mode in hypnagogia must take place somewhere between the second and third stages correlated with alpha-theta EEG rhythms. This would be very similar, if not identical, to White's Steps Three and Four of the psi induction procedure wherein the percipient is on the verge of losing awareness of his surroundings.



Perceptual, quasi-perceptual, and cognitive-affective phenomena during psi:

In what follows I shall argue that, first, all the perceptual, quasi-perceptual and cognitive-affective phenomena encountered in psychic studies are also to be found in hypnagogia, second, the circumstances under which they occur are the same (this constitutes a continuation of arguments presented in the previous section), third, the order in which they occur is the same, fourth, phenomenologically their differences are mainly interpretative (i.e., set and/or setting). I shall begin by examining the phenomena of clairvoyance and telepathy, setting aside the examination of those accompanying ecsomatoses (OOBE) which I propose to undertake in the following section.

The first argument above constitutes a blow by blow comparison of hypnagogic and psi phenomena. To begin with, since both hypnagogia and psi states share the same antecedent conditions, i.e., psychophysical relaxation, it is not at all surprising to find that they display the same perceptual or somato-sensory phenomena. As with hypnagogia there are reports of drifting, floating, body schema alterations such as shrinking, expanding or disappearing of parts of the body, body dissociations (OOBEs). Roberts (undated, pp.10 and 16) writes that during sittings for psychic development the would-be psychics may feel "a cold shudder", have "a sensation of heat" or "a feeling of extreme drowsiness", "feel as if they were floating" and "become aware of colours, light, spirit powers and other things...to the extent of seeing the [development/seance] circle complete with the medium's body,...". Roberts (p.16) further describes what is clearly identical to Leroy's (1933) and Sartre's (1978) observation of the hypnagogic self-induced paralysis and the well established hypnagogic body schema alterations: "There may be occasions when the medium will feel as if the body is completely inert, or as if the throat cannot speak. Another sensation is that of feeling minutely small, or enormously large". My own notes from observations made at psychic development circles

include reports such as: "I felt my body growing bigger", "I felt heaviness, and then parts of my body dissolving; and then my arm started shaking", "my face was as if covered by cobweb", "half my face disappeared", "I felt the features of my face changing as though a mask or another face were being impressed on them". Garrett (1941) notes that

all the sensory faculties are called into play in telepathy...I have known that in the telepathic experiment the senses of taste and smell were serving me as keen agents in knowing that a telepathic state was functioning... The percipient may feel a faint electric tingling or warmth. There is a tactile response and 'goose-flesh may appear on the skin'.

(Garrett 1941, pp.52-53)

Interestingly, and in relation to Arnold-Forster's (1921) and Ornitz et al's (1967) observation that in the hypnagogic state the subject's senses become more acute, Roberts says that "small bodily discomforts quickly become accentuated when the psychic power sensitises the medium" (p.4) and "every medium who experiences trance control will notice how the senses seem to become more acute, so that a quiet cough sounds like a thunderclap and the rustling of clothing like a hurricane" (p.17). Likewise, Northage (undated, p.49) notes that a "sudden noise can give a most dreadful physical shock...".

To the self-posed question "How can I be sure that it is a state of trance control and not just a submerged part of my mind which has become active?" Roberts (p.18) responds:

To answer this question, the medium must examine the results of the controlled communications. Are you able to say things which were not previously in your mind? Do you become aware of things about people which you did not know before? Do you 'see' vivid pictures while under control which you do not recognise in the normal state?... Do you feel different? Does the body become hotter or colder? In short, does the controlled state differ from the normal one?

(Roberts, undated, p.18)

However, a positive answer to the above questions puts the developing medium's experiences well within the



phenomenological span of hypnagogia. We may remind ourselves that having thoughts, saying things, composing prose, poetry or music which were not previously in one's mind, having sudden convictions about things and people, having vivid, autonomous and novel imagery, and being in an 'altered state of consciousness' are typical features of hypnagogia.

The striking resemblance between the visual phenomenology of hypnagogia and that of clairvoyance will be made clear in the following quotations. Roberts (p.21) again writes:

A clairvoyant vision is generally discerned when the ordinary consciousness is at rest. Sometimes it will consist of a complete figure or a face of a person; or it may be a nebulous form which appears to be hidden in a cloudy substance. Often it is in the form of beautiful scenery or brilliantly coloured symbols. The onset of the opening of clairvoyant vision is frequently heralded by clouds of delicate colours which seem to be swirling within the head of the sitter. These experiences of the inward consciousness are often thought to be purely imaginative. There is one test by which the medium can prove whether they are psychic or imaginary: In imaginary pictures the thinker visualises the picture before it is seen; if the image is of psychic origin it is 'seen' first and then thought about — indeed, the medium is often surprised by the fact that he (or she) has seen something which is so unexpected.

(Roberts, undated, p.21)

Similarly, Garrett (1941) writes:

In working clairvoyantly, I have tried, for my own understanding, to build figures imaginatively, and to make dramas happen to them. However, they never hold together, and continually change and fall away from their type. But the clairvoyant image 'happens'. You come upon it. It might always have been there; you open a door for a moment, and are confronted with it. The door closes, as it opened, and the image is gone.

(Garrett 1941, p.175)

Edwards (undated, pp.26-28) referring to the images of "spirit people" says that "at first these may be very small, no bigger than a postage stamp, or on the other hand very large like a close-up on the cinema screen". Turvey (1911, pp.41 and 56) described his visual psychic

experiences as "a sort of film or ribbon continually moving, as does an endless belt in cinematograph film". Dessoir (1886, pp.123-124) wrote: "gaze with closed eyes into a deep darkness. There will then soon emerge in it images of objects, diagrams, etc., which seem to change into one another" (see also Schmoll et al 1888; Schmoll 1887; Sidgwick 1924). Sinclair (1930) noted that

fragments of form appear first. For example, a curved line, or a straight one, or two lines of a triangle. But sometimes the complete object appears; swiftly, lightly, dimly drawn, as on a moving picture film. These mental visions appear and disappear with lightning rapidity. Then one must 'recall' this first vision... It is necessary to recall this vision and make note of it, so as not to forget it.

(Sinclair 1930, pp.200-1)

Northage (undated) distinguishes between "objective" and "subjective" clairvoyance. In the former,

the spirit appears as apparently solid and physically real that the moment of perception can pass before the medium is consciously aware that sight was psychic not physical.... Objective clairvoyance is frequently experienced on awakening from sleep... Subjective clairvoyance is when the pictures form within the head, and can be miniature although perfect in every detail. They are dimensional and the medium is able to see all around them; they also have a distinctive light and colour... With spirit friends wrinkles, lines or blemishes may be seen in the skin; also, colour of hair and eyes, texture of dress, even fingernails.

(Northage, undated, pp.58-59)

In my interview with Northage (March, 1981: see Appendix) she spoke of subjective clairvoyance as being a "mental picture" that "has a peculiar light. Quite a distinctive light that comes out of the whole picture, as if the whole picture is motivated by light". She also pointed out that psychic colours are much brighter than physical ones, adding: "It's not so much colour as light: Imagine colour full of light". She further remarked that visions can appear minutely small or very large and they are always "perfect in detail"; they move very fast and seem to be both in front and yet "all round me". During a 'demonstration', she explained, she ceases to be



analytical and loses self-consciousness almost entirely, she becomes so deeply absorbed in the psychic reality that she does not even recognise familiar people in the audience. When speaking in trance although she hears her voice "it's almost like talking in another language", nothing really registers - as with visions, words come and go and are forgotten the moment they are spoken, it's like having "gas at the dentist's": one does not lose consciousness altogether but he is not particularly concerned with what goes on.

Instructing on how to develop ESP, Huson (1977, pp.64-65), having pointed out the conduciveness of hypnagogia to such enterprise, notes that after the initial stages of psychophysical relaxation one finds himself staring into what feels like three-dimensional space:

In this depth the 'imaginals' (as I named them) appear dimly at first, but more solidly and clearly with practice. These may be things you know in daily life like books or bottles or flowers, or they may be large abstract shapes, often architectural in appearance. Keep your mental gaze on them and you'll notice that they are continually growing and evolving into something else, like a speeded-up film of a plant growing. When I saw my first surrealist painting as a child, I knew exactly what the artist was portraying.

(Huson 1977, p.65).

By this time, Huson explains, one has travelled two-thirds of the way to achieving true clairvoyance: the next step is to learn to "hook" the ESP target. Elsewhere (p.77), he explicitly argues that "hypnagogic dreams can and do become channels for ESP scanning".

In the above examples it can be seen that visual psi experiences are practically indistinguishable from those occurring in hypnagogia both in their content and in their nature. Also, the mental state of the subject appears to be the same. In addition, it is pointed out that hypnagogia is conducive to psi activities.

The following quotation from Butler (1968) will throw extra light on some of the points presented so far and reveal more phenomenological similarities between psi states and hypnagogia. On this occasion Butler is describing

the technique of scrying in a black mirror. After the instructions for the preliminary psychophysical relaxation, the subject gazes quietly into the mirror there to see the surface of the mirror first clouding over with what looks like mist which then breaks up into whirling clouds and brilliant sparks of light. He continues:

If you can keep your mind in the quiet state, then the appearance in the mirror may begin to increase and to take other forms. Fragmentary glimpses of brilliantly coloured landscapes, faces grave and gay, and luminous coloured clouds may all show themselves... These pictures are the first cousins to those curious little pictures which are seen by some people during the entry into sleep and again when awakening from sleep. The psychologists call them hypnagogic images, and assume that they are made and projected by the subconscious. This is true enough, but in our present case, they may be more than just images; they may be message-carrying images, bringing information which has been received by the inner senses. They are, as it were, waking dreams, and have their own definite meaning.

When you have reached this stage, you have begun to develop clairvoyance. You will discover for yourself the curious trick of holding the mind in a poised and yet relaxed condition; something which seems impossible at first. Many times you will become suddenly excited at what you see, and the whole vision will close down immediately. You will find that your visions begin to divide into two distinct groups. One will be much larger than the other,... One set of images will be of normal everyday things, and the other will present symbolic forms to you. You will also find that the symbolic vision seems to be associated with a positive questioning attitude of your mind. The literal vision appears to be reflected into your mind without any effort on your part; it is a passive vision...

Now as you proceed with your development, you will find that certain images have a symbolic value, and are the code which your inner self is using. You will have to learn from your visions what such symbolic forms mean to you. We have stressed these three words, for they are very important. What a symbol means to the inner self of one person is not necessarily the meaning it has for another...

(Butler 1968, pp.51-54).

There are a number of very interesting and relevant points to be brought out of this lengthy quotation. To begin with, the point is made once more that psi states, just like hypnagogia, are dependent on psychophysical



relaxation, that the slightest degree of excitement would bring either to a halt.

Second, if it were not for the psychic 'set and setting' within which the imagery referred to appears, there would be no justification phenomenologically for calling it psychic and not hypnagogic. Butler refers to the images under discussion as "first cousins" to the hypnagogic imagery, but the only distinction he draws between them is that the former may be "message-carrying images". However, the "message-carrying" feature appears to be neither an intrinsic nor a distinguishing characteristic of the phenomenology of the state. As already argued (e.g., by Huson 1977) hypnagogic experiences can and do become channels for ESP scanning. On the other hand, imagery emerging in a psi state has not been conclusively shown to be always "message-carrying". Thus, once again, the distinction is primarily one of 'set'.

Third, we encounter here the well-known autosymbolic hypnagogic phenomenon. Butler appears to be distinguishing between literal visions and symbolic visions. The latter, he importantly connects with "a positive questioning attitude" or an "effort" on the part of the subject. If we pursue the argument that a psi state is essentially a hypnagogic state (minus 'set and setting') then the introduction of "effort" (Silberer's "effort to think") might lead to the appearance of the autosymbolic hypnagogic phenomenon wherein one's questioning attitude is represented in the emerging symbolic imagery.

The fourth point is a continuation and extension of the third: emerging symbolic imagery has a specific meaning for the individual (see also: Edwards pp.26-7 , and Roberts p.22). This is precisely the point made by Silberer (1965) and Slight (1924) and discussed in the section on "Accompanying awareness of significance" in respect to hypnagogia.

That often the only features distinguishing psi from hypnagogic phenomena are those of set and/or setting can be seen from a juxtaposition of reports from both areas. For instance, Butler (1973) gives the following typical "reading" of a type of psychic activity called "psychometry":

I see before me a wide expanse of water- I think it is the sea. Yes, I feel it is the Atlantic Ocean. I am standing on the deck of a ship - it seems to be a wooden ship - it is a warship of some kind, for I see guns - muzzle-loading guns of Nelson's time or thereabouts...

(Butler 1973, p.10).

Compare this with one of Archer's (1935, p.28) hypnagogic visions: "I see a picture of a calm, oily sea; no land is visible, but there is an idea in my mind that it is the Irish Sea near Dublin". Archer also reported seeing the hypnagogic image of a Red Indian (pp.42-3; see also Miller 1906, for a more detailed case), and, on other occasions, hearing the irrelevant sentences "Agnes enjoyed her punch" and "Charlie writes suggesting we should meet here at Gipsy Hill" (p.33). Leroy (1933, p.23, obs.xi) reported hearing hypnopompically the sentence "George is dead". Had such experiences taken place in a 'psychic' setting or had they occurred in subjects with appropriate beliefs they might have easily been interpreted as 'messages' from some supernatural source. The following example from Garrett (1941) is of double importance as it not only argues for a possible psi activity in a clearly hypnopompic state but also reveals some very strong psychological similarities with Slight's (1924, pp.278-9) hypnopompic experience to be discussed below:

I was awakened from sleep one night by a strong feeling that somebody had something urgent to tell me. So vivid was the dream that someone had been urging me to listen to him that I got up, and went to the door of my apartment, certain that I had been awakened by knocking. However, there was no one there. I went back to bed, and heard a very quiet voice say, 'You won't remember me, but I met you years ago with Lawrence'. The same voice continued, 'I am Lawrence. I wish that they would realize that I am decently dead, and finished with the ways of man'. The voice ceased at that point... In the morning I had a letter from a friend in Dorsetshire, who wrote asking the question: 'Do you believe that Lawrence of Arabia was killed in a motorcycle accident, or was that a story given to the press to hide some important piece of work that he is doing at the moment?' I should mention here that the night before I had had no thought in my own mind of Lawrence of Arabia, but had thought, rather, of D.H. Lawrence; but I then remembered that I once met Lawrence of



Arabia through a very well-known and high-ranking English officer who had admired D.H. Lawrence, and who had introduced me to both of the Lawrences on the same day.

(Garrett 1941, pp.131-2).

It is important to note that although Garrett had not thought of Lawrence of Arabia the night before, she had, however, thought of D.H. Lawrence. The two Lawrences were related in her mind not only by name but also by the fact that she had been introduced to both of them on the same day - indeed, in Garrett's example it would appear that the two Lawrences became identical and interchangeable thus pointing to the already observed tendency in the hypnagogic-hypnopompic state to transform 'similarity' into 'sameness'.

Slight (1924) reported the following hypnopompic-hypnagogic experience which, had the appropriate psychic set and setting been present, would most certainly have been attributed to a psi state and/or some supernatural agency. It also illustrates a basic method of introspective probing or questioning employed by many psychics as well as hypnagogists:

The next example occurred in the morning while half awake. During the previous day I had been much impressed by the change in appearance of a lady whom I had not seen for some time. Later in the day I conversed with some friends on the topic of how a man aged gradually whereas a woman aged rapidly and was exposed to influences from which a man was exempted, as child bearing, the menopause, the burden of the family and the like.

I had begun to pursue this line of thought in the half awake state when suddenly I found myself spelling out the letters B-R-O-W-N, and dimly aware of a bell tolling with each letter. After the N the name Marguerite came rapidly to mind and only then did I piece the letters together and realize they formed a name known to me. Then I became fully awake and heard a bell tolling, which occurred every morning at this time...

I relapsed into a half waking state and began to turn the matter over in mind. First I remembered being informed - though I had long forgotten - that although Miss Brown was now unprepossessing and even ugly in appearance she had been handsome and beautiful before the onset of her illness, and miraculously changed after the onset. It seems that Miss Brown had formed a splendid example to illustrate the previous train of thought but I still felt unsatisfied

and then the image of another lady appeared - a relation who had personal connections with Miss Brown which fact dawned on me as if for the first time.

Realization came that here lay the real interest and the previous line of thought also applied to the latter lady. Miss Brown had formed a double bond since she provided an ideal illustration of such change in a woman and at the same time was connected with a personal interest.

The name Marguerite was a mystery since I had never heard Miss Brown's christian name and it had no connection with the other lady. No association would come to this name and I was left with the feeling that possibly further elements lay behind it which might give a deeper interpretation. Later in the day I discovered that Miss Brown's christian name was Marguerite and on reflection found that there had been only a few fleeting occasions on which I might have learned this fact.

(Slight 1924, pp.278-9).

Besides the striking similarity in the 'mediate' way in which the Lawrences in Garrett's case and the two women in Slight's case were related, in Slight's example there is implicit a method of 'hypnagogizing' which is in essence the same as that employed by psychics in their psi activities. Indeed, Slight touches on two aspects of this method: The first aspect illustrates the technique of posing questions or probing the process. In both hypnagogia and psi states it is required that in order to gain a response from the process one must pose a mental question or adopt a questioning attitude without, however, interrupting one's receptive mode. This is demonstrated in the present example by Slight's observation: "I still felt unsatisfied and then the image of another lady appeared". That is, he adopted an attitude of questioning to which the hypnagogic process responded by bringing forth another image. This, as we have seen, is at times autosymbolic. Indeed, the same appears to be fully appreciated by Slight in the previous sentence where he says: "It seemed that Miss Brown had formed a splendid example to illustrate the previous train of thought". This latter feature (autosymbolism) may, in fact, be due to the current specific mental attitude of the subject. For instance, it may be aytosymbolic only when the questioning is related



to oneself or to some abstract ("egocentric") material, whereas, when the questioning is directed to a more precise 'external' object - be it an image or a 'thing' - the outcome may be a further unfolding of imagery related to the original image but also containing novel elements some of which may be facts concerning the object and which may be argued not to have been known to the subject prior to this experience.

This, in fact, is a line of questioning advocated and pursued by most psychics. Roberts (p.23) writes: "The medium should not be satisfied to receive one name such as 'Mary' but should ask which 'Mary', 'What is her other name?' When the double name is given, then the medium should ask for the name of the town in which she lived, and so forth...". In my interview with Northage I asked her to describe her reaction when she gives some information to a 'sitter' which he does not accept as veridical. She said: "I go back and say to myself 'How did I get that?' That's the first thing I do. I retrace my steps, I go back and find how I got it, first of all, because I could have inadvertently changed it. Or, I ask [my spirit communicators] for more information: if I know I'd given it out accurately then I say 'They [i.e., the 'sitter'] don't understand that, explain it', and it may be that something added to it makes it clear". And we must bear in mind that when a psychic engages in ESP/clairvoyant activities and describes his/her imaginal experiences "he should try to do this without emotion and try to hold the attunement gently, allowing the thought impression to continue" (Edwards p.23). This is identical to Edmunds' observation in respect to hypnagogia, i.e., that one may engage in a concurrent description of his hypnagogic experiences so long as he remains receptive towards both the imagery and his physical environment.

The other aspect of the method of both hypnagogizing and engaging in psi activities touched upon by Slight is found in his remark that after his initial hypnagogic experience he became fully awake and then "relapsed into a half waking state and began to turn the matter over in

mind". Likewise, Sinclair's (1930) wife describes how after the extra sensory perception of the image of a drawing (and after the activity of sketching on paper what she received), she returns to the ESP state of mind in order to continue with the experiment. In respect to hypnagogia the ability to oscillate in and out of the state (also supported by experimental investigations: e.g., Oliver 1976; Budzynski 1977), is a strong indication of how easily the state may be abstracted from its setting (viz., preparing and leading into sleep) in which case the currently discussed similarity with ESP states may turn once more into identity.

A further observation relating to the above is the presence of the feature of a sense of realization, as if for the first time, that such and such is the case in regards to the nature of an image or idea. This experience of *jamais vu* cuts across both hypnagogia and psi states. In the example under discussion reference to it is made at least twice - in the second paragraph: "only then did I piece the letters together and realize they formed a name known to me" and the third paragraph: "which fact dawned on me as if for the first time". A possible third reference may be in the opening of the fourth paragraph. In the psi literature this is pointed out as the characteristic feature of novelty, of the knowledge of new facts regarding a psi object about which the percipient did not or could not have known (see e.g., Roberts p.18 cited above). These facts appear to the percipient as if for the first time.

This element of novel realization is of more than passing interest. It is, of course, a matter of debate whether the presence of the character of novelty is to be interpreted as a mark of the extrasensory acquisition of new facts. In the present example Slight does not remember ever having heard Miss Brown's first name and he seems to doubt whether such an event occurred on the few fleeting occasions on which he might have learned it. However, he does not clearly impute a paranormal character to his experience, thus leaving open the possibility



of a forgotten experience. Indeed, the fact that the presence of the experience of *jamais vu* should not be taken as a mark of acquisition of knowledge extrasensorially is illustrated by Slight's observation that the existing personal connection between his relative and Miss Brown dawned on him as if for the first time. The manner in which recognition may be taken as cognition of new facts in hypnagogia may be further illustrated by his observation that having spelled out the letters B-R-O-W-N "the name Marguerite came rapidly to mind and only then did I piece the letters together and realize they formed a name known to me" - obviously, had he not recognised the name, the piecing together of the letters would have been taken as yielding knowledge of a new fact. But again, the seeming acquisition of new knowledge in this state may turn out to be the reviving of a long forgotten memory as evidenced by Slight's observation that he remembered being informed, though he had long forgotten, about Miss Brown's former beautiful appearance (see also Kubie 1943, on the use of induced hypnagogic reverie for the recovery of repressed amnesic data).

Related to the above is the feeling of significance or conviction often, but not always, accompanying the imaginal experience of a psychic. Sinclair (1930, p.200), for instance, says: "When the true visions came there usually came with them a 'something' which I called a 'hunch'". Johnson (Tyrell 1936, p.101) says that a true psychic experience "has the settled feeling of finality about it. It impels you and simply does not let you doubt it". Garrett (1941, p.178) spoke of a "process of knowing as apart from thinking". Butler (1973, p.42) points out that, although "there is always a background of impressional sensing which accompanies the pictures seen or the sounds heard, and this background is important in enabling you to interpret that which you perceive", nonetheless, at the early stages of a psychic's development "sometimes the pictures arise without any surrounding impressions" (p.45). Likewise, White (1964, p.38) notes: "Sometimes this impression [of an image] appears spontaneously; at

these moments the percipients almost universally report a strong feeling of conviction that the impression is the correct one. But very often, on the other hand, the impressions are neither so 'single nor as singular'. Garrett (1941, p.10) remarked that "the beginning clairvoyant" passes through a stage of perceiving 'doodlings' or random images. These are elements which can be formed gradually into "word-designs":

As an example of these word-designs, he might say 'I have a feeling' that the images suggest 'Happiness'. 'I see the lines forming the letters "H..a..p..p..y.."' - but the letters slowly spelled out (at times, even pronounced as an integrated word 'Happy'), or the feeling of 'Happiness' will have no concrete significance for him, although the word may have a clear meaning to the agent with whom he is working.

(Garrett 1941, p.11).

Interestingly, investigators in the hypnagogic area have also suggested that the appearance of lines and simple geometric designs may belong to a relatively early stage of hypnagogia (e.g., Leaning 1925), and that sometimes images may carry a 'feeling', an awareness of their significance whereas on other occasions they may appear "irrelevant" to the subject. From our discussion of hypnagogia so far it becomes clear that the mark of irrelevancy may be due to the presence of two conditions either of which may appear separately or in combination: The first condition relates to the stage of hypnagogia, viz., early stage, and the second to the degree of facility, "training", or "practice" one has had with hypnagogia. As van Dusen (1972) pointed out, even simple hypnagogic images may convey a meaning and thus be significant if the subject allows himself to become involved in his hypnagogic imagery and enter into a "conversation" with it. But clearly, in order to achieve this, his attention must be absorbed in the unfolding of the imagery, that is, he must become "fascinated" by this internal activity and, to a considerable extent, withdraw psychologically from his environment. Garrett (1941) talks of switching to a different reality (altered state of consciousness); Le Shan (1973, 1974, 1976) refers to it as the "psychic reality"; and Northage remarks that



when the latter is active (e.g., when she is engaged in a clairvoyant activity) her physical environment recedes and the psychic becomes predominant, she becomes absorbed in it. In both the hypnagogic and psychic activities the imagery may have "no concrete significance" for the subject, i.e., it may appear irrelevant, until one learns to 'question' it (see Slight's example above).

Furthermore, in the example of "word-designs" given by Garrett we may note, first, how a "beginning clairvoyant" just like a hypnagogist, may have a feeling of significance concerning his imagery, second, that letters may appear and spell out a word or a name (cf. Slight's example), third, that both the feeling of significance and the word may relate to each other but still remain "irrelevant" to the subject. In respect to the third remark, the difference between a hypnagogist and a clairvoyant would lie in the manner of their facing their "irrelevant" imagery: The former would generally dismiss it as "irrelevant", or at most as having some relationship with his subconscious, whereas the clairvoyant, as Garrett points out, would seek for possible relevance in the experiences and personality of the observer or agent with whom he is engaged in a clairvoyant experiment.

Stanford (1967, 1977) argues that:

the strong sense of conviction often associated with cognitive-'perceptual' ESP cases likely derives not from the intrinsic nature of such events but from the circumstances that the ideas, feelings, images, etc., psi-mediated into awareness in such instances are so unusual or inappropriate in the life-context in which they appear that the person experiencing them is inclined to impute to them an unusual or psychic origin.

(Stanford 1977, p.847).

It seems to me, however, that in his above argument Stanford is placing the wrong emphasis in the wrong circumstances. This is, in fact, an occasion where the sense of conviction or accompanying awareness of significance often encountered in hypnagogia may throw light on the occurrence of the same or similar feeling in "cognitive-'perceptual' ESP cases". It is a matter of observation that the feeling of conviction occurs both in ESP and

in hypnagogia when (a) the subject's analytical mind is completely subdued, neutralized or otherwise engaged, (b) a fully receptive state is achieved, and (c) attention is absorbed. In hypnagogia these conditions are found fully present in the third stage in which also awareness of surroundings is either completely lost (latter part of third stage) or greatly diminished. These very same conditions are also present when, in ESP, a percipient experiences a "strong sense of conviction" - indeed, as we saw earlier in this section, various psychics explicitly report that a hypnagogic state must be reached and sustained (merely preventing it from leading into sleep) if a successful extra-sensory experience is to take place, the latter often being accompanied by a sense of conviction. This analysis indicates that the sense of conviction, whenever it occurs in hypnagogia or in psi states, is intrinsic to the state and that it is not derived from the current circumstances. On the contrary, the imputation of a psychic origin to such events may be due, as already alluded to in this section, to the percipient's "set and setting". It is of course to be expected that the percipient in a psi experiment should impute such origins to his imaginal experiences since they derive from the setting itself with his own set of beliefs in psychic phenomena added (see: Braud's 1975b, "altered world new" and "momentary importance of psi"). We can easily see that under non-experimental, spontaneous circumstances, e.g., in natural hypnagogia, imaginal experiences are interpreted according to the person's set of beliefs.

Ecsomatic phenomena and the conduciveness of hypnagogia to their occurrence:

The psi-conduciveness of hypnagogia is further evidenced by (a) the tendency of ecsomatic experiences to occur spontaneously at sleep onset and at waking from sleep, (b) the fact that subjects with long experience of ecsomatosis not only report having had most of their experiences at such times but also instruct that the induction of hypnagogia is a necessary step to the



achievement of such events. I shall examine these two sets of evidence below.

Green (1968b) reports that "both 'just after going to bed' and 'before getting up in the morning' are mentioned by different subjects as favourable times, the former predominating" (p.51). Typical cases may read like: "while lying on my back in bed with my eyes closed, preparing to go to sleep I find myself moving upwards" (p.51), or "these out-of-the-body experiences occurred at night when I was in bed in a semi-conscious condition, that is, almost asleep, or on the verge of waking". (p.84).

In her investigation into out-of-the-body experiences (ecsomatosi, exteriorization, astral projection) Green (1968b) reports that out of 176 cases, 66.4% were reported as having taken place while the subject was lying down and 20.2% as sitting, that is, "in the position of least muscle tone" (p.50). Although only about 37% of the subjects said that they noticed they were relaxed during their ecsomatosi, and about 21% said they were the "same throughout" and 31% expressed no opinion, in the case of the latter two groups it may be argued that they felt no difference because they were already relaxed prior to their experience. In fact, several subjects emphasize that "the degree of relaxation which they experienced in the ecsomatic state was abnormal for them, saying, for example, that they were 'relaxed completely; more than usually', or 'extremely relaxed, quite the reverse of my conscious state'" (p.54). The case is more so with those who induce their ecsomatosi. One subject, for instance, writes: "I had to lie down on the floor, in a fairly warm atmosphere, not cold and concentrate on putting my whole body to sleep, breathe deeply, two or three times, and let my body completely go... I sort of drifted away... I opened my eyes, and I was looking down at myself laying on the floor" (p.57). Many subjects, however, report that deep relaxation merely resulted in their falling asleep, until that is they achieved some proficiency at keeping themselves posed between wakefulness and sleep (pp.57-59).

Instructions on how to induce "exteriorization" (OOBE) encountered in the occult and psychic literature explicitly recommend the hypnagogic-hypnopompic state as highly conducive to the induction of such experiences. For instance, Muldoon (Muldoon and Carrington 1965) writes: "I would awaken between one and four o'clock in the morning, usually, and the astral body would begin to 'rise', as I entered sleep again; but, on other occasions... the projection would begin in the hypnagogic state when emerging from sleep" (p.232). Muldoon instructs that if a subject wants to achieve OOBE the easiest way to affect it is

in the hypnagogic state, when going to sleep - if he will but concentrate his attention upon himself and try to see what is really happening, as he enters sleep. In other words, if he will but train himself to keep the balance between consciousness and unconsciousness - while slightly favouring the former - without tension in mind - and will maintain this well into the hypnagogic state, he will feel the discoincidence, as the phantom [psychic 'double'] enters the zone of quietude, usually as a falling sensation.

(Muldoon and Carrington 1965, pp.124-5).

Similar instructions are also given by Fox (1962, p.138), Monroe (1974, pp.200-2), Carrington (1978).

Monroe (1974) says of exteriorization in hypnagogia that "this is perhaps the easiest and most natural method and usually ensures relaxation of both body and mind simultaneously" (p.200). Interestingly, he notes that after the necessary initial relaxation one may begin to "hallucinate 'mind pictures', or light patterns. These seem to have no great significance, and may merely be forms of neural discharge. I can remember, for example, attempting to achieve this state after watching a football game on TV for several hours. All I saw were mind pictures of football players tackling, running, passing, etc." (p.201). It is clear that Monroe considers the hypnagogic 'mind pictures' accompanying the induction of ecsomatosi as a signpost in the process although he attaches "no great significance" to them (see Baker 1980 for a similar view). Incidentally, he is here providing an example of



'perseverative' hypnagogic imagery (see chapter 4).

Other workers in this area offer detailed lists of hypnagogic phenomena occurring during ecsomatosis. Muldoon and Carrington's (1965, pp.74-75) list includes: sensations of floating, whirling, up-rising, the seeing of lights, images, figures, landscapes, the hearing of various sounds all the way from inarticulate noises to beautiful strains of music, the hearing of one's name being called, the feeling of being touched.

Many of Green's (1968b) subjects commented on the brightness and vividness of the imagery experienced in the ecsomatic state. As in hypnagogia, they also remarked on the illumination being apparently sourceless and diffuse (p.77) as if "lit from the inside" (p.72), the senses are "heightened", "enhanced", "more acute" and the visions are "crystal clear" with minute visual details being perceptible (p.80); in some cases the subjects reported as seeing not with their eyes but with "something else" or "with whole consciousness" (p.69).

A description which clearly links the deliberately induced ecsomatoses of psychics and occultists to those that occur naturally in hypnagogia is provided by Collard. Having described her visual experiences in hypnagogia, Collard continues:

With the appearance of scenery and interiors I acquire a new faculty - that of travel. Though still aware that some aspect of myself remains in the body, I go on exploring expeditions through houses, streets and country lanes, or wander through the aisles of vast cathedrals... my sense of being present in these scenes is so vivid that I have to remind myself that I can walk into the houses unseen, and that I need not stop to open doors, but can pass through them.

(Collard 1953, pp.233-4).

Typically, ecsomatic subjects report kinesthetic experiences of "falling through the bed", "floating upwards", "sinking", or "drifting" (Green 1968b, pp.37, 46, 57, 58, 111). Sometimes these experiences are accompanied by paralysis or catalepsy (pp.57, 60). On this, Muldoon and Carrington (p.69) quote Walsh who writes:

As sleep is coming on, the sensation of falling may be experienced. This is occasioned by the general relaxation of the muscular system, which occurs at this time. Should a person be disturbed, while in the hypnagogic state, the normal transition from waking to sleeping, or the reverse, may be markedly disordered.

Consciousness may fully awaken, but the motor centres may awaken more slowly; this causes a temporary paralysis of the limbs, speech, and consequently an inability to move or talk. This form of paralysis, called 'nocturnal paralysis' by some writers, may occur after natural awakings.

(Walsh: quoted by Muldoon and Carrington 1965, p.69).

Significantly, this condition of paralysis occurring naturally in the hypnagogic-hypnopompic state is specifically sought for by occultists (e.g., Fox 1962, Muldoon and Carrington 1965, Monroe 1974) who utilize it to achieve ecsomatoses and who otherwise would have to induce it in themselves by means of deliberately producing a hypnagogic state. Reports of spontaneously occurring ecsomatic experiences often indicate the presence of extreme numbness or paralysis (e.g., Green 1968b, pp.57, 60). The same is also present in self-induced trance. The problem at hand is, as Fox (1962, p.126) puts it, "to put the body to sleep while, the mind is kept awake". He instructs: "Favourable times to experiment are after a substantial repast or when we wake in the morning feeling very loath to arise; for the body is then naturally disposed to enter the trance state".

In relating hypnagogia to ecsomatoses four important observations present themselves in connection with the affective-cognitive state of the subject.

The first observation concerns the psychological calmness and detachment frequently reported as experienced by ecsomatic subjects. As with hypnagogia, it is often pointed out that both the induction and the ecsomatic experience per se are characterized by "a perfect balance in the mind" (Green 1968b, p.98) and that "the occurrence of emotional disturbance or conflict almost invariably leads to the termination of the ecsomatic state" (p.94). Green reports that



subjects describe themselves as being calm, relaxed, detached or indifferent... feeling what would appear to be an impersonal kind of curiosity.

Many subjects emphasize the 'positive' quality of the detachment they experienced, claiming that it had nothing in common with resignation or lack of feeling. One subject, for example, writes of being 'detached but in a positive way'.... Another refers to having felt a 'wondering curiosity', and yet another reports: 'a very great and agreeable interest in what was going on'. Whether the subject's interest is referred to as 'mild' or 'extreme', it does not seem to entail emotional involvement in the outcome of events.... One subject, for example, refers to feeling 'objective interest and fascination'.

(Green 1968b, pp.94-95).

The importance of the presence of an "unconflicted emotional state or a 'blank mind' as a prerequisite" of the occurrence of ecsomatosiis is not only stressed by subjects who induce the phenomenon by practice but is also "remarked on spontaneously by several subjects of single, involuntary ecsomatic experiences" (Green 1968b, p.111).

The second observation is closely related to the first and refers to the fact that "ecsomatic subjects do not appear to be inclined to engage in analytical thought; their attitude appears, generally, to be that of an alert but usually passive observer" (Green 1968b, p.82), an "interested spectator sort of thing!" (p.102) as one subject put it. The experience is often likened to "watching a cinema film" where the subject feels "just an interested observer of something which seemed to arouse no surprise in me" (p.102). The 'film-watching' attitude may be related more widely to the general tendency of the subject to accept as perfectly reasonable phenomena that are clearly not so and which he would certainly be more critical of in the waking state. The same attitude of detachment has also been noted in hypnagogia (e.g., Leroy 1933, pp.18-19; Critchley 1939, p. 637; McKellar 1979b, p.96; 1979a, pp. 190-191).

The third observation refers to remarks by subjects that while in the ecsomatic state they experience the feeling that "they could obtain an answer to any question they chose to formulate" (Green 1968b, p.119). This is a "feeling of 'all-knowing and understanding'", a feeling that one knows things without thinking, and that "everything

seemed easy and possible" (cf. e.g., Hollingworth 1911; van Dusen 1972, 1975).

The fourth observation refers to the hypnopompic trance accompanied by what Fox (1962) has called False Awakening. The latter has been reported by a number of workers in the hypnagogic-hypnopompic area (e.g., McKellar 1957; see chapters 4 and 9) as a state of dreaming in which one believes he has awakened and is engaging in some waking activity, e.g., getting up, getting dressed, making coffee, etc. Fox connects this with a concurrent state of paralysis accompanied or followed by ecsomatosis (see also Muldoon and Carrington 1965, pp.50-1). Further, the state of hypnopompic False Awakening is related by Fox to the subject's awareness that he is dreaming, thus leading to what he calls Dream of Knowledge, also known as Lucid Dreaming (see chapter 9).

#### Hypnagogic experiences as psi, religious and mystical events:

In this section belong what Green and McGreery (1975, pp.75-79) have called "informational" or "warning" cases in which "the information conveyed may be the solution to a problem with which the subject has been consciously occupied for some time, or it may be a spontaneous 'warning' of a danger which the subject has not previously thought about" (p.75). For instance, one subject reports that she was wakened suddenly one night to see her dead grandfather standing by her bedside. Wondering why such a phenomenon should take place she went downstairs to look at her husband's dinner in the oven. "As I went downstairs and opened the door at the bottom", she reports, "I gasped. The house reeked of gas". Another subject reports that a voice woke her up one night telling her to go downstairs and look at her dogs. Grumbling, she eventually followed this order to find that one of her dogs "had thrust her head and one paw right down the blue sleeve of the jacket [the subject had covered the dog with] and got stuck there".

In my interview with Ivy Northage she recounted two



hypnopompic experiences which she explicitly considers to be paranormal in nature. Garrett (1941) gives various personal examples of telepathy and clairvoyance that took place at retiring to bed at night or waking up in the night or in the morning. Green and McCreery (1975) mention a number of apparitional cases that took place either at sleep onset (pp.3, 114-115, 116, 131) or as the person woke up either in the morning or in the middle of the night (pp.5, 78, 91, 95-96, 121, 131). They note that in many of these experiences, "the subject, who is awake at the time, temporarily loses his awareness of his normal environment, and seems to be perceiving a different one" (pp.1-2), i.e., he is hallucinating. They call these experiences "waking dreams" by analogy with sleep-dreams and class both as "metachoric", that is, as "experiences in which the subject's field of perception is completely replaced by a hallucinatory one" (p.2).

They further report that 25% of their apparitional cases took place immediately after the person had woken during the night. Most subjects state that their experiences occurred "immediately on waking rather than after an interval of time" (p.71) and, although some of the subjects report that they have been dreaming prior to waking and seeing an apparition, in the majority of cases the subjects assert that the experience took place after waking and that they were not dreaming prior to waking. This observation is important in the present study as it argues against the definition of hypnopompic imagery being always the continuation of dreams. Interestingly, these workers conclude that "the process of waking is an integral part of the experience of perceiving an apparition" (pp.71-72). This remark supports the argument that both hypnagogic-hypnopompic and paranormal experiences require a certain level of arousal for their occurrence. In the case of the hypnagogic state (sleep onset) the arousal level required is either already present or is achieved through a deepening and prolongation of the state. On the hypnopompic side we may now see that the equivalent level of arousal is achieved not in the dream state but immediately after the subject has woken and

before he is fully awake. This verges on the state of False Awakening.

Green and McCreery (1975, pp.124-125) noted that 61% of the apparitional cases reported to them took place when the subject was lying down (38%) or sitting (23%).

Along with the numerous spontaneous psi cases reported as having taken place during the hypnagogic-hypnopompic state, in this section will be included those cases to which their experiencers impute supernatural or religious import (e.g., Iamblichus 1895; Forman: cited by Ellis 1911; Swedenborg 1928-48, 1977; Poe 1949). The appropriateness of their inclusion here lies in the fact that they are considered by their experiencers as coming from an outside source via supersensory or spiritual means. For instance, Forman considered his hypnagogic visions of mountains and hills rolling against him as sent by heavens to warn him of future difficulties (Ellis 1911).

Leaning (1925) found that her correspondents fell into four groups according to the significance they attached to their hypnagogic visions, viz., those who believed that their visions were: (a) scenes from previous lives, (b) premonitions, (c) scenes of events taking place somewhere at the present time, (d) symbols of moral value. McKellar (1957) remarked that given the appropriate set of beliefs a person experiencing hypnagogic imagery might interpret it as supernatural. Also Roheim (1952), McKellar and Simpson (1954) and Liddon (1967) have drawn attention to the strong possibility that mythology and folk-lore may have their genesis in hypnagogic experiences. Maury (1878) had proposed that many visions of the saints were hypnagogic experiences.

In contrast to Maury's remark which is clearly meant to argue against imputing a supernatural character to many of the (hypnagogic) visions of the saints, Tappeiner (1977, p.23), a theologian, considers the experiences of hypnagogia as "a psychological paradigm for the interpretation of the charismatic phenomenon of prophesy". Without relinquishing the belief in the ultimate spirituality of the prophetic phenomena, he employs (a) the concept of the unconscious which he equates "with the domain of 'spirit'



in which the Holy Spirit functions" (p.28) and (b) the phenomenological and cognitive-experiential state of hypnagogia to explain how prophesying (a "spontaneous utterance... for purposes of upbuilding, encouragement, and consolation" p.25) takes place. When a person in a religious group enters "the revelatory state of mind" (see Lindblom 1963, p.173) he may receive "a 'vision' or a 'seed-thought' or both. Here 'vision' refers to an inner picture or 'cartoon' which simply emerges suddenly, whole, and with no previous conscious consideration of it". It is not to be understood, however, that all hypnagogic experiences are 'prophetic' or spiritual in any sense, but only that the act of prophesying, which has its genesis in Spirit, registers and expresses itself through the psychological mechanism operating in hypnagogia. Tappeiner argues that

This is accomplished both by focussing attention upon spiritual reality... and by quieting the ordinary busy consciousness of the individual... The person who prophesies in this context has been opening up to the deeper level of the Spirit's purposes and activities through worship, prayer, and glossolalia. Along with this is a type of unconscious processing of the materials presented in the meeting. Then, in a 'revelatory state' this material is suddenly 'crystallized' in seed thought, 'vision' or 'beginning phrase', all of which are suggestive of hypnagogic imagery and it emerges as an insight into the leading of the Holy Spirit and the genuine feelings and concerns of the worshipping community of the Spirit.

(Tappeiner 1977, p.28).

The view that hypnagogia constitutes a state in which religious and mystical experiences can be had appears also to be supported by reports of sufi mystics. Abbé Rouquette (1899) who made a study of Moslem secret societies in Africa writes:

The truth then shows itself in all its glory, sometimes in the form of such inanimate things as coral, sometimes in the forms of plants and trees. Or these hypnagogic visions may be of animal forms, or 'auto-scopic' visions in the form of the dreamer himself, or even in the form his 'Sheikh'.

(quoted by Warcollier 1938, p.219).

Similar views, including techniques for utilizing the hypnagogic state for the attainment of mystical experiences, are expressed by Tibetan Yogis (Evans-Wentz 1978; see also chapter 10).

Psychological observations and theoretical formulations:

Regressivity: As in the case of hypnagogia, investigators in the psi area, and specifically in telepathy and clairvoyance, (e.g., Warcollier 1938, 1948; Garrett 1941; Le Shan 1973, 1974, 1976) often compare psychic mentation to childlike, primitive, mystical or magical modes of thinking. Moreover, in both cases the subject may return (or 'regress') to earlier modes of cognizing and feeling accompanied by a sense of being protected or 'cocooned' characteristic of early childhood. Garrett (1941), for instance, writes:

I have developed a 'passivity-consciousness' that has enabled me, for over a year, to go to my bed at twilight, and there for several hours to bridge the gulf of memory until it becomes almost as though the visioning child of the early years was less than one-half hour away. This bridging of memory was accomplished by developing an imaginative faculty of peopling the room with several successive manifestations of myself - in retrogressive order - at different ages, until the child replica led all the others back to its initial knowing.

(Garrett 1941, pp.36-37).

She further remarks (pp.143-4) that whenever she felt the need to understand or explain psychic phenomena she would employ this "process of going to the child-me".

Warcollier (1938, p.101) remarks that "the state of passivity in the percipient which favours it is like a dream state, and the will is dormant", and "the passive state of the percipient in a telepathic experiment is one of conscious sleep. The images appearing in that state are dream images" (p.50). As already seen in earlier references, the 'telepathic state' is often brought about by concentrating on a specific image to the exclusion of everything else. This state of concentration and absorption Warcollier calls "mono-ideism" and notes that "this



mono-ideism cannot be long maintained without provoking a change of state approaching sleep, betrayed by the appearance of images and the beginnings of normal dreams" (p.20). He, further, relates the 'telepathic state' to the "state of passivity" in general saying that in the latter "all thought takes the form of images". Bearing in mind that elsewhere he argues that fatigue (1938, p.51) and drowsiness (1948, p.28) are favourable conditions for telepathy, probably mainly because these two conditions are naturally occurring states of passivity, telepathy and hypnagogia can be seen to be further related.

Arguing for a dream-like symbolic basis of telepathic imagery, Warcollier (1938, 1948) illustrates the presence of certain dynamics or principles, e.g., condensation (syncretism), dissociation, (fragmentation), inversion, which also occur in hypnagogia. He further argues that the same dynamics are to be found in the thinking of primitive people, children, the insane, and the experiences of peyotl takers (1938, pp.126-127). He remarks that forms of telepathic images are encountered in the neologisms of children and schizophrenics and that, according to Lévy-Bruhl (1910), these forms resemble the sign language of deaf mutes and their characters are also to be found in the words of primitive language (Warcollier 1948, p.63) For purposes of comparison a purported telepathic example containing neologisms comparable to those occurring in hypnagogia may be found in Sinclair (1930, p.37) where Mrs Sinclair 'received' and wrote down a string of German and near-German words (cf. e.g., Trömmner 1911). Interestingly, Warcollier (1938, p.128) remarks that "like a child copying an adult's drawing, the percipient does not necessarily attach to the same elements the same importance as does the agent".

He further relates the above to Cousinet's (1932, 1945) remark that when a child holds his hand out to a little girl playing with a balloon, it is not the balloon alone he desires but the whole ensemble comprising of the girl, the balloon and himself, to Piéron's (1921) proposition that a mental image is an inner gesture, and to Lipps'

(Warcollier 1948, p.36) "mechanical theory of perception" according to which "for every visual act there is the translation of a spatial quality into a motor attitude of our own body. These same attitudes are projected into the image". In addition, Warcollier (1938, p.131) draws attention to the common characteristics shared by telepathic images and recollections of tachistoscopic perceptions, viz., that recollection is fragmentary:

Sometimes a detail reveals itself, and one fragment appears in consciousness; then a second and a third, with no apparent connection between the order of their appearance and the order of their interest. They are entirely irrational. Sometimes a combination of details of the same dynamic intensity appears, giving a confused idea of the whole.

(Warcollier 1938, p.131).

The observations and arguments presented by Warcollier may perhaps gain the appropriate perspective when seen through Garrett's "process of going to the child-me". Here Garrett is not merely imagining that she returns to the "child-me" but actually returns to the child's "initial knowing", i.e., to the child's way of thinking and perceiving the world. In this respect Warcollier's arguments acquire experiential confirmation.

As with the above arguments, in earlier chapters the 'regressive' character of hypnagogia was also discussed. What is of great relevance here is that the points of relationship or similarity between hypnagogia and these types of mentation are the same as those pointed out as existing between the latter and psi mentation. Let us look at them point by point.

To begin with, not only are we told that Garrett's telepathic functioning is that of the "child-me" but also that the original induction of this state or type of mentation was achieved by developing a "passivity-consciousness" as she lay in bed at twilight.

Second, Warcollier refers to the way fragmented and dissociated imagery appears to the percipient. Identical remarks have been made by hypnagogists and investigators in the hypnagogic area (see Part One).

Third, he remarks that, like a child, the percipient



does not attach to the same elements the same importance as does the agent, and that, as in tachistoscopic perception, fragmented and dissociated details are revealed which are "entirely irrational" - the latter observation may also be related to the way stabilized retinal images tend to fragment themselves as they gradually fade out. Now, if the importance the agent attaches to the elements of a picture are taken as 'rational', the whole contention appears to argue for an "entirely irrational" fragmentation and assemblage of details. This is in agreement with the observations of hypnagogists who repeatedly remark on the fragmentariness and irrelevance of their imagery. Moreover, it is in agreement with my hypothesis that the irrelevancy of hypnagogic imagery may be due to the fact that hypnagogic mentation surfaces from frames of reference not coincident with 'waking rationality'. Interestingly, Le Shan (1973) proposes a similar hypothesis in order to explain clairvoyant mentation: he suggests that when a subject engages in a clairvoyant activity he switches to another frame of reference, to what he has called "clairvoyant reality".

Fourth, Warcollier's comparison of telepathic mentation to a child's attitude of taking in an experience as a whole and feeling himself part of it, has clear parallels in the hypnagogic absorption and fascination resembling a 'chemical' link wherein the subject lacks the ability or inclination to analyse and differentiate. This attitude is also to be found in the remarks of ecsomatic subjects (see e.g., Green 1968b).

The fifth point is an extension of the fourth: in hypnagogia imagery is often not merely perceived but felt in a kinesthetic manner, as if some unseen internal lines of connection between the subject and the image were in operation. Likewise, Garrett (1941, p.43) notes: "The beginning of telepathic reception makes itself felt in my body; my mind as such never seems to play any part".

A further but very important observation may be added. In my review and analysis of hypnagogia subjects on the whole emphasize the 'externality' of their imagery, that

is, of its seemingly taking place outside them. At the same time it is reported that the induction and prolongation of hypnagogic imagery is dependent on an attitude towards it characterized by acceptance, curiosity, 'passive' attention, interest, friendliness, empathy, that very often the imagery is experienced kinesthetically, and that strong emotions (e.g., disgust, fear) bring the experience to an abrupt ending. This same apparent contradictoriness between empathy and objectivity (externality) are also encountered in psi activities. Garrett (1949), for instance, writing on clairvoyance, says: "The perceiver's sense of unity with what he perceives, and at the same time the complete objectivity and lack of response of all that he shares in so intimately - together, these two factors, which are somehow contradictory, constitute a puzzling problem for thought after the experience" (Garrett 1949, p.182).

The subconscious level and paralogical types of association:

Warcollier (1938; also Murphy 1944; Tyrrell 1946) proposes that successful psi activities are carried out at an unconscious level and that many partly successful telepathic experiments are due to interference from the conscious and the subconscious. The latter appears to be lying between the conscious and the unconscious comprising temporarily forgotten experiences and dissociated memories, which, given the appropriate conditions and stimuli may rise to consciousness. The unconscious is by definition an unknown and unknowable mental level, whereas subconscious mentation can be - and indeed is - experienced in dreams and dreamy states.

Given the above, the justification for postulating a level of unconscious mentation can be supported inferentially from reports of the subjects' attentional state during telepathic, clairvoyant, trance and ecsomatic experiments, that is, by the evidence that during these experiments the subject is psychologically withdrawn both from his physical and conscious-logical environment (he must not reason, according to Warcollier) and his attention is



passive and absorbed-fascinated in some dissociated mental space. However, since by definition the unconscious lies outside any conscious experience, it is by means of the subconscious that psi experiences reach consciousness. It would appear, nevertheless, that none of these three 'compartments' is entirely isolated from the others, that they grade into each other. As Murphy (1944, p.16) remarked, we are here dealing with a "complicated system of potentially interconnected regions". Warcollier's concept of the unconscious appears to be very similar to Alexander's (1909) concept of the subconsciousness. Like Warcollier, Alexander proposes that there are

Forms of mentation that are never 'in' consciousness at all, that are never (in ordinary experience) conscious; yet which must be assumed in order to make what is conscious intelligible. 'Subconsciousness', in this sense, means that 'mind' is not co-extensive with 'consciousness', but includes along with conscious mentation states and processes of which the conscious self is only indirectly aware.

(Alexander 1909, pp.615-6).

The main relevance of this theory to my discussion of hypnagogia lies in the observation that, first, where the conscious and subconscious merge into each other known rules of association, logic, and memories may be operative, and, second, where conscious, wilful, mentation is the least present (approaching the unconscious) rules of association, logic and memories appear to operate in a different frame of reference.

The first observation may be related to the early stages of hypnagogia wherein imagery changes may result from conscious or semi-conscious associations following known rules of association, such as contiguity, resemblance, contrast, etc. For instance, one of Galton's (1883) correspondents reported the hypnagogic visual image of the beak of a bird changing into the barrel of a gun as a result of associations of shape and, perhaps, game-shooting. Similar changes have often been observed in telepathic experiments. For example, Warcollier (1938, p.111) reports an experiment in which the percipient saw the image of the trunk of a tree, then a branch of a tree,

then a gun barrel, the form of a finger and finally a bundle of faggots, the actual image 'transmitted' being a painfully tightly bandaged finger.

The second observation we may relate to the later stages of hypnagogia wherein irrelevancy of associational links is most striking. Here, if any associations are to be postulated at all, these are mediate associations. That is, associations which may link A to B via C where the latter is connected with A and B separately (cf. Vihvelin 1948). Warcollier (1938) offers a number of cases of telepathic experiments in which he believes mediate associations were in operation. In respect to hypnagogic images Alexander (1909), for instance, says that "they defy all known rules of association.... And in the vast majority of cases 'association' is emphatically not a word that can be employed in description; if there be such a thing as irrelevance, these images show it.... It should be needless to add that I see no discoverable connection between the images and my concurrent reading, interests, or activities" (pp.623-624). He concedes, however, that two kinds of his personal hypnagogic experiences revealed associational links (p.623) Alexander (1909, p.623) also notes that as he becomes interested in a particular hypnagogic image "it proceeds to play Protean changes upon the original design". This compares very closely with Garrett's (1941) yew tree that appears in her state of "passivity-consciousness" and undergoes almost innumerable apparently unconnected changes.

Relevant to Warcollier's hypothesis of unconscious or mediate associations is Alexander's further argument that although hypnagogic images may be analysed into their respective constituents they are complete in themselves and unexplainable. He says: "they contain 'two and two', but they are 'four' - and the addition remains to be accounted for. The addition is the mental fact of their making; a fact which has never been a conscious fact" (p.630). He also notes that "my own state at the time is almost untinged by feeling - perhaps a languid interest in watching the images or amusement at their



absurdities" (p.624), and that as hypnagogic images "have no associational points d'appui they are almost impossible to remember" (p.626).

His last remark is significant in two respects. Firstly it suggests that, as argued above, whatever associational links may be present at this level these must be other than those present in the waking state. This may explain the occurrence of phenomena such as paramnesia, déjà vu, and jamais vu in hypnagogic and psi states. It may also explain the often expressed inability of a psychic reporting on a paranormal perception to tell whether the experience refers to the past, present or future (cf. Le Shan 1973). In a similar respect, Warcollier (1948, p.55) reports that "a photograph of the percipient was once used as a target, and the percipient described the photograph in detail without recognizing himself" - compare this to Slight's (1924) hypnopompic example. Similarly, Muldoon (Muldoon and Carrington 1965, p.50) reporting on a hypnopompic experience preceding an ecsomatosi describes the phenomenon, encountered also in epilepsy, in which, he says, "I was aware that I existed, but where I could not seem to understand. My memory would not tell me".

Secondly, the presence of associational links different from those operating in the waking state may suggest the employment of different rules of logic and/or a different frame of reference: Discussing hypnagogic images, Alexander (1909) argues that these are "mental constructs" which "are not constructed in consciousness", from which he infers that "they are the work of mind that is not conscious". He continues:

Further, my experience leads me to believe that these images are the work of a highly differentiated mental compartment. I find little connection between my ordinary thought and imagination and the work of my hypnagogic agent - whatever it may be. To formulate the points of difference: (1) There is almost no associational connection. (2) There is certainly no volitional connection, the images are spontaneous and self-willed. (3) There is no emotional connection. In short, the images are the work of an agent that does not share in my interests, aims or feelings.

(Alexander 1909, p.631).

Although Alexander has not made a study of his hypnagogic experiences by stage, it would appear that most of them must have taken place at an advanced hypnagogic stage wherein the subject is deeply withdrawn from his physical and psychological environment (from his "interests"), he is emotionally relaxed (no emotional links), and passive (no volitional connections). If his experiences are from this stage, then Alexander might be justified in saying that the imagery experienced is the work of a highly differentiated compartment which appears to have nothing to do with his waking self - a conclusion suggestive of activities set against an apparently foreign frame of reference. However, as we saw above, some of his experiences seem to have taken place at earlier stages which suggests a grading of 'compartments'. Indeed, although he clearly distinguishes between the hypnagogic and hypnopompic states, in discussing his "hypnopompic utterances" he says that "even at this inchoate thought-level we have more than associational word-clustering; we have certain elements of reasoning, the apodictic judgement-form, and a real amalgamation of ideas which is not entirely without pertinence nor a kind of nonsensical sense" (p.634).

Nonetheless, allowing for Alexander's possible conceding that there is a grading of 'compartments' at the earlier stages of the hypnagogic state (and the hypnopompic nearest to waking), at deeper levels of hypnagogia the frame of reference is so greatly changed that, although the experiences may carry with them some feeling of coherence suggestive of the presence of a central core of intelligence, the mentation appears quite foreign. Or, put another way, "Judged by its works... the hypnagogic agent may reasonably and usefully be designated by Myers' phrase a 'subliminal self'; for however low may be the plane of its mentality, it is still with a relatively independent mentality of some sort that we are dealing" (Alexander 1909, p.632).

Whether, along with Alexander, we postulate the existence of an "agent", or propose a drastic change of the frame of reference, we are here dealing with a realm of experience in which the known rules of association appear to be



non-operant. Or, if they are operant, they are so in a mediate way. Moreover, in the process of transferring such experiences to a waking, analytical frame of mind the subject may often lose (forget) the experience altogether or bring forth into consciousness distorted fragments accompanied by memory peculiarities (e.g., déjà vu, jamais vu, etc.).

In respect to paranormal perception, Le Shan (1973, p.94) similarly proposes that:

An event or relationship which is central and crucial in a frame of reference using one set of unities is tangential and trivial in a reference frame using another set. According to the IR [Individual Reality] theory, the C-IR [Clairvoyant Individual Reality] uses entirely different unities than the S-IR [Sensory Individual Reality]. The apparent triviality, tangentiality, and superficiality of much of the sensitives' production is due to the data being translated from one system to another.

(Le Shan 1973, p.94).

Likewise, Heywood (1964, p.201) refers to Niels Bohr's observation that "the part of the self which is, so to speak, in focus during an ESP-type experience is not the part which later tries to analyse it".

It would thus appear that at a certain level of 'consciousness' both hypnagogic and psi activities appear to occur within a frame of reference or mode of experiencing which has different laws of logic, unities, relational systems, etc., than the waking mode (cf. Le Shan 1973, p.99). Van Dusen (1972) in respect to hypnagogia and Le Shan (1973) in reference to the clairvoyant reality both support the view that the subject of such experiences usually maintains a distinction between the two modes by means of setting, viz., the hypnagogist usually has his experiences within the setting of going to sleep, and the clairvoyant or medium may employ forms of setting such as the trance, automatic writing, scrying, etc. This observation may throw light on psychotic experiences where the subject usually loses the ability to distinguish between experiences that come from different modes (see chapter 12).

Set and setting revisited: Two possible points of difference in antecedent conditions between experimental psi (as distinct from spontaneous) and the hypnagogic-hypnopompic state may lie in the facts that in the former (a) there is usually a period of "blankness", or of intentional visualization followed by "blankness", before psi activity, and (b) there is always on the mind of the subject the diffused awareness that he is involved in a psi activity. A third point may lie in the sense of mental alertness felt by many psychics when in a psi state.

In respect to the first condition the difference may be only apparent and due to the fact that in psi performance the percipient in the "old method" is aware - indeed, he makes a point of being so - of the steps taken and the 'state(s)' he shifts into. Thus, he is aware of his induced state of blankness, a state which is primarily the result of psychological withdrawal. The occurrence of the latter ushers in all the known hypnagogic phenomena; but whereas in the case of natural hypnagogia psychological withdrawal increases continuously accompanied by decrease in arousal level leading into sleep, in the case of psi experiments these two factors are checked as they reach a certain point preventing the percipient from falling asleep.

Significantly, "abundance of alpha rhythm (a sign of reduced cortical arousal) has not been shown to correlate reliably (across experiments) with ESP performance, either on a between- or within-subject basis" (Stanford 1977, p.832). However,

if a person is asked to relax or meditate prior to an ESP test, the resultant slowed alpha rhythms (characteristic of increased quietude and passivity) must, if the subject is to succeed at the ESP task, accelerate (shift upwards in frequency) when he actually enters ESP testing and is attempting to utilize psi-mediated cues... There would appear to be an optimal level of arousal for successful ESP performance, a level at which the subject might be characterized as quietly or calmly attentive to internal cues.

(Stanford 1977, pp.832-833).

(See also Stanford and Lovin 1970; Stanford 1971; Stanford and Stevenson 1972).



On the other hand, a successful psi state is often described as one of near-dissociation wherein one almost loses one's awareness of the surroundings (e.g., Gibson 1937; Tyrrell 1938).

The important subjective-objective correlations appear to be: increase of psychological withdrawal as an integral part of both hypnagogia and the induction of a psi state accompanied by decrease in the level of physiological and behavioural arousal, followed by increase in internal attention (and psychological withdrawal) accompanied by a shift to higher EEG alpha rhythms (but not by an increase in behavioural arousal). This process appears to have a parallel, to a certain extent, in the NREM and REM sequences wherein the initial (NREM) withdrawal and decrease in arousal is followed by signs of physiological arousal (REM stage), correlated with dream activity which is characterized by increase of internal attention and the re-emergence of sleep stage 1 EEG (but absence of behaviour arousal). Another parallel would be that of the state of trance resulting from hypnagogia when the latter is prevented from leading into sleep but is not accompanied by the "diffused" intention to receive psi cues mediated by an agent. In the naturally occurring hypnagogia the increase in psychological withdrawal and internalization takes place in a climate of diffused intention to fall asleep, and a state of blankness, if and when it occurs spontaneously, is hardly ever noticed - there does not seem to be any functional need for noticing it as such.

However, the argument of many psychics and investigators that blankness is achieved by internalizing attention and eliminating analytical thinking by engaging the mind in the non-analytical task of observing an internal image, has clear parallels in hypnagogia where psychological withdrawal is accompanied by gradual reduction of thought processes and rising of qualitative changes in mentation (see e.g., Vihvelin 1948). The main difference here being that in psi experiments the state is induced whereas in hypnagogia it may occur naturally.

Interestingly, the "blank out" phenomenon interpreted as "indicating a functional similarity between continuous

unpatterned visual input and no input at all" (Honorton 1977, p.859; see also Caldwell 1958; Cohen 1957; Tepas 1962) has been found to occur also in concentrative meditation and ganzfeld stimulation (Ornstein 1971), occurring in the latter about 20 minutes inside the experiment (Cohen 1957). This form of deafferentation occurs naturally in hypnagogia through the process of psychological withdrawal preceding sleep, and the fact that the "blank out" phenomenon takes place after 20 minutes of ganzfeld stimulation (the latter being responsible for an externally induced deafferentation while meditation is responsible for an internally induced deafferentation) may account for the fact that in hypnagogia this phenomenon as such is rarely reported - except in the form of an 'absence' that might be reported as 'drifting' or 'being elsewhere'. The ganzfeld-hypnagogic procedure augmented by uniform auditory input (white noise) has been employed by Bertini et al (1964) who found that it facilitated "the flow of ideation and imagery".

In psi research the ganzfeld procedure has been used successfully by, e.g., Honorton and Harper (1974), Braud, Wood and Braud (1975), Terry and Honorton (1976). The relationship between these psi-ganzfeld studies and hypnagogia lies in the similarity of their psychological regulation/withdrawal leading to a 'stimulus hunger' that precipitates the appearance of quasi-hallucinatory phenomena.

In regards to the second condition, viz., that of awareness that one is involved in a psi activity, this clearly constitutes the subject's mental set. By itself it would undoubtedly 'bias' the interpretation of any phenomena that might appear during the experiment or psychic exercise. This is not to depreciate the fact that the results in psi experiments often reach high levels of significance but to point out that if psi and hypnagogic experiences are phenomenologically the same (and the evidence appears to support this view) the most important distinguishing factor might be the percipient's or subject's mental set. In which case the calling of a



phenomenon a hypnagogic experience or a psi occurrence may be seen purely as a label attached to it to signify the type of functional significance we ascribe to it at the time of its occurrence.

It might thus be argued that the induction of a psi state is hypnagogic in two respects: (1) If the subject concentrates non-analytically on a specific image he inadvertently induces in himself a hypnagogic state which, if the appropriate steps are not taken, results in sleep, (2) If he "blanks" his mind he in effect initiates in himself a process of drastic quantitative reduction (and arguably, elimination) of 'normal' thought formation which, as Vihvelin (1948) pointed out, constitutes the initial stage of hypnagogia followed by qualitative thought changes.

It transpires that various psi activities, e.g., telepathy, clairvoyance-clairaudience, psychometry, ecsomatosis (OOBEs) occurring under conditions prevailing in (1) above comprise, in essence, phenomena taking place in a sustained hypnagogia, and those occurring under conditions prevailing in (2) argue that psi phenomena tend to occur naturally in a hypnagogic-hypnopompic state, which is tantamount to saying that the hypnagogic-hypnopompic state is conducive to the occurrence of psi activities.

The third point, that of feeling alert during paranormal activities, is clearly referring to the mental state of the subject in respect to his imaginal environment and not to his actual surroundings - it resembles more a state of False Awakening rather than of Wakefulness. It may thus be closely related to the sense of certainty or conviction referred to by psi and hypnagogic subjects. Significantly, this state of alertness is reported as occurring after the process of induction of psychophysical relaxation, quantitative reduction of thought processes, and elimination of analytical thinking. This process, however, would in most cases, as we saw, lead to sleep unless it is checked while attention is maintained on, or directed to, some internal space or activity.

It might be objected to at this point that even if psi induction is in essence hypnagogic it ceases to be so when, at this stage of withdrawal, the process is prevented from leading into sleep. Against this argument, there are two important sets of observations. The first comes from our knowledge that hypnagogia is a fragmented process "with the mind in various stages of alertness" (Alexander 1909, p.623). A person falling asleep naturally vacillates in and out of wakefulness. There are many reports in which the subject, having become aware of the unfolding hypnagogic imagery, he becomes further interested in it, a fact that, as Alexander (1909, p.624) pointed out, "tends to prolong the hypnagogic period and so to multiply the number of the images". (see also Maury 1848; Budzynski 1972; Huson 1977). Thus the prolongation of hypnagogia and its prevention from leading into sleep may happen naturally in a non-psi climate. Moreover, the longer the hypnagogic period the greater is often the resultant internal alertness. We may remind ourselves of Monroe's (1974, pp.200-201) remark that the practice of holding the borderland state "indefinitely without falling asleep" results in "consciousness deepening". (See also van Dusen 1975 on Swedenborg's hypnagogic practices).

The second set of observations argues that the production of hypnagogic imagery is not necessarily linked with the process of falling asleep (e.g., Maury 1848; Alexander 1909; Rouquès 1946; Collard 1953; McKellar and Simpson 1954; Myers 1959). This apparent contradiction in terms argues in essence that 'falling asleep', just like 'engaging in psi', constitutes the 'set and setting' of the subject and that all the known hypnagogic phenomena may take place in the absence of such set and setting. This may widen the function of hypnagogic imagery, or rather of those phenomena studied under the set and setting of the hypnagogic state, in that they can be seen to occur in other states of the organism under circumstances that need not be 'hypnagogic'.

The very close relationship of psi states to hypnagogia



can be seen in a summary form in their respective syndromes. The hypnagogic syndrome is characterized by the following main features: Psychophysical relaxation, shift to "passive volition" (marked by quantitative reduction of thought processes), shift to parasympathetic predominance, reduction of exteroceptive and proprioceptive input, psychological withdrawal (marked by receptive mode shift, detachment, and the appearance and increase of qualitative thought changes), decreased arousal, need or intention to sleep.

Braud's psi-conducive syndrome (Braud and Braud 1975b) is characterized by: physical relaxation, decreased arousal, reduced sensory distraction and increased concentration, a more inward focussing of attention, decreased action mode and increased receptive mode, an altered world view, momentary importance of psi.

In comparing the two syndromes it can be seen that the only differing features are basically "need or intention to sleep" as opposed to "an altered world view", "momentary importance of psi" and "increased concentration". However, as we saw earlier, the psi markers "an altered world view" and "momentary importance of psi", and the hypnagogic marker "need or intention to sleep" constitute the syndromes' respective set and setting. If, on the other hand, "an altered world view" stands as an actual component of a psi experience, such as an altered view of the world the subject may suddenly experience while engaging in psi, this, again, may be paralleled in hypnagogia by similar experiences; and this in addition to the fact that many psi experiences occur spontaneously in hypnagogia. Thus the feature of "increased concentration" is characteristic only of experimental psi. Even there, when "increased concentration" is coupled with "a more inward focussing of attention" the tendency is to fall asleep - indeed this combination, as we saw earlier, has the effect of lulling the analytic mind, an effect also encountered in hypnosis and occurring naturally in hypnagogia. "Decreased arousal" in hypnagogia is practically the same as the qualified "decreased arousal" of the psi-conducive

syndrome discussed at the beginning of this chapter. Indeed, the stipulation of a qualified decreased arousal need be stressed here as it constitutes one condition that distinguishes both hypnagogia and conscious psi states from ensuing sleep.

Summary and conclusions:

In this chapter I examined closely the relationship of some psi states, viz., telepathy, clairvoyance, clair-audience, psychometry, ecsomatosis and some forms of trance to hypnagogia. It was found that hypnagogia and the above types of psi are very closely related in their respective psychophysical induction and their respective phenomenology. It was also found that: hypnagogia is highly conducive to psi activities; the experimentally induced psi state is essentially a state of hypnagogia prevented from leading into sleep; the psi-conducive syndrome and the hypnagogic syndrome are mainly distinguished by set and setting; the mentation in both cases is of a non-analytic nature characterized partly (early stages) by a primitive and ontogenetically regressive use of associational links (and thought in general) and partly (later stages) by an apparently total absence of association.



SCHIZOPHRENIA

Comparisons between hypnagogic and schizophrenic mentation have been drawn by various authors (Maury 1853; Kraepelin 1906; Hollingworth 1911; Schjelderup-Ebbe 1923; Schultz 1930; Schneider 1931; Froeschels 1946, 1949; Mintz 1948; Vihvelin 1948; McKellar 1957, 1972; Oswald 1962; Vogel et al 1972).

Probably all investigators in this area would agree that the study of hypnagogia should enhance our understanding of both pathological states in abnormal individuals and of 'abnormal' states in the normal population. For instance, McKellar and Simpson (1954, p.271) pointing to the phenomenological similarities between schizophrenic and hypnagogic experiences, made the important remark that "to understand abnormal mental occurrences more fully, it may be necessary to examine abnormalities themselves in terms of seemingly abnormal experiences which a psychotic merely shares with many non-psychotic normal individuals".

Vihvelin (1948) drew attention to the possible differential-diagnostic value of hypnagogic hallucinations when, in a clinical setting, the decision has to be made as to whether the patient is having hallucinations in complete wakefulness or pseudo-hallucinations in hypnagogia. On the other hand, some workers have argued that hypnagogic experiences manifest through mechanisms akin to those operating in pronounced schizophrenia (e.g., Schultz 1930), that they constitute a first step towards pathological hallucinations (Baillarger 1846; Schultz 1930), that they point to hypnagogia being conducive to the occurrence of psychotic hallucinations (Baillarger 1846; Schultz 1930), and that they are sometimes indistinguishable from 'real' hallucinations (Schultz 1930; see also McKellar and Simpson's 1954, p.270 example quoted below). Thus, as Vihvelin (1948, p.381) points out, hypnagogic experiences may "afford the only occasion when also a sane person, closely studying himself, can gain at least some conception

as to the nature of real hallucination".

In what follows I shall confine myself mainly to the task of identifying phenomenological features common both to hypnagogia and schizophrenia. I shall also briefly discuss certain connections between schizophrenia and epilepsy and examine arguments suggesting that hypnagogic experiences are pathogenic in nature. I shall not argue for a complete phenomenological identification of schizophrenia with hypnagogia. This is partly because of the fact that the term schizophrenia is a collective one (Kraepelin 1906; Bleuler 1950) comprising a group of disturbances not all of which can be said to have the same aetiology and phenomenology. I shall, however, continue to use the term as a convenient umbrella to cover a number of symptoms that may loosely represent the core of an entity, occasionally employing more specific terms to denote particular stages or types of schizophrenia. For the sake of clarity I shall begin by briefly outlining the four major types comprising the clinical picture of idiopathic schizophrenia and their generally correlated six principal disturbances, and seek to identify the latter in the phenomenology of hypnagogia.

#### Schizophrenic disturbances and their features:

The six principal disturbances in schizophrenia according to Mayer-Gross, Slater, and Roth (1969) are: (1) disturbance of thinking, (2) disturbance of emotions, (3) disturbances of volition, (4) catatonic symptoms, (5) primary delusions, (6) hallucinations. These disturbances are readily correlated with the four types comprising the clinical picture of schizophrenia, viz., simple, hebephrenic, catatonic, and paranoid. Mayer-Gross et al write:

Loss of affective response is the leading symptom of simple schizophrenia. Thought disorder, emotional abnormalities and volitional weaknesses constitute, in varied distribution, the hebephrenic form. Catatonic symptoms predominate in the catatonic type, often accompanied by volitional and emotional disturbances. Primary delusions followed by secondary delusional interpretations determine the paranoid picture. Hallucinations may be present in all types except in the simple schizophrenic, in whom the absence of



any productive symptoms is a conspicuous feature.

(Mayer-Gross et al 1969, pp.277-8)

Ever since Kraepelin's bringing together of a number of symptoms to describe the collective disease entity demential praecox, workers in this area have been trying to identify a fundamental disturbance that would characterize the illness. Stransky (cited by Mayer-Gross et al 1969) proposed "intrapsychic ataxia" as the basic symptom and described it as a lack of co-ordination between thinking (noö-psyche) and emotions (thymo-psyche) now generally referred to as incongruity of affect. Bleuler (1950) saw the 'splitting' as primarily a thinking disturbance appearing as the result of the loosening in the association of ideas through which repressed complexes and unconscious wishes emerge to gain the upper hand and disrupt the personality. The patient withdraws from reality whenever the latter clashes with his ruling complexes. Whereas Jung (1909) considered schizophrenia to be psychologically identical with dreams and hysteria, Bleuler held that the disso-  
ciation of thinking was a primary disturbance independent from any influences from the unconscious. Berze (1914) pointed out as the primary disturbance "insufficiency and lowering of psychic activity" resulting from some unknown organic damage or disfunction. Mayer-Gross et al (1969) comment that

The lowered mental activity may prevent the making of a clear distinction between what is real and what is imaginary, so that the schizophrenic indulges in delusional ways of thinking and behaving. Other authors have used as a comparison the half-waking state of the normal person going to sleep. A person in this state may have similar difficulties in thinking clearly and in distinguishing between reality and imagination.

(Mayer-Gross et al 1969, p.265).

N. Cameron (1939b) proposed as an essential symptom an over-inclusiveness in thinking, defined as "an inability to preserve conceptual boundaries, resulting in incorporation of irrelevant ideas leading to vagueness and confusion of thought" (Mayer-Gross et al 1969, pp.265-6). Payne (1962) held that this might be the outcome of a "breakdown"

in a hypothetical filter mechanism which normally screens out those stimuli, both internal and external, which are irrelevant to a task at hand, to allow the most efficient processing of incoming information". McReynolds (1960, p.279) considers over-inclusiveness to be the result of a high level of unassimilated percepts which "tends to reduce the degree of rigorousness or strictness which the patient habitually requires for assimilating percepts" [viz., perceptions and images].

Although I shall examine some of these theories in more detail later it is in place to draw attention here to the above observations and hypotheses arguing for 'dissociation', 'loosening of associational links', 'over-inclusiveness', 'breakdown of a filter mechanism' and the laxity of categorizing as they can also typically apply to hypnagogia. Let us now look at the schizophrenic disturbances and their relationship to hypnagogic mentation and behaviour.

The main anomalies of the thought process in schizophrenia may be grouped as follows: loosening of association of ideas, dissociated thinking, over-inclusiveness in conceptualization, thought blocking and thought withdrawal, pressure of thought, thoughts spoken aloud or echo de pensée, thoughts 'put into' the patient's mind. Mayer-Gross et al (1969, p.266-7) having pointed out that schizophrenic thought disorder is an abnormality of the thought process and not an abnormality of the ideas which may be expressed by the patient, further note that it "has other aspects than a simple disconnection of thought or the putting together of overtly disconnected ideas", viz.:

In early cases it often appears as a 'woolly' vagueness, or as an inconsequential following of side-issues which lead away from the main topic of conversation... The patient's thought is directed by alliterations, analogies, clang associations, associations with the accidents of his environment, symbolic meanings, and the condensations into one of several, perhaps mutually contradictory ideas. The effect is sometimes like that of wit, and indeed may be on occasion genuinely witty; and the patient may therefore appear facetious or jocular when speaking about serious subjects. Words are used out of context, as it were, a concrete meaning being employed when the abstract would



be more appropriate, and vice versa. The schizophrenic clings to unimportant detail, in this resembling the epileptic, permits the aim of his thinking to slip out of sight and lacks discrimination in his thinking process.

(Mayer-Gross et al 1969, p.267).

Below are three examples of schizophrenic thinking from Mayer-Gross et al (1969), two being excerpts from letters and the third a verbal report showing "schizophrenic thought disorder, with incoherence, tangentiality, neologisms and ill-defined confluent paranoid delusional ideas" (footnote of Plate VIII):

It is a tragedy perhaps, I find practically all the foreign human beings had this knowledge, and perhaps at least certain of our own Nationality such as myself had not, even my friends, comrades, were aware of the State Authorities must have been, which I feel you will accept as to be Sts - in all aspects relevant to delirious to try and induce, such as been my lot, constant body, head, Activation numerical strong, and distant Voice face and body barrage.

(transcript of Plate VIII).

I have just looked up 'simplicity' and the dictionary says 'sim = one, plicare = to fold, one fold'. I told Dr. H----- that I dreamed he returned to me the story I sent him which he had folded six times when I had folded it once making it double. Jesus said that the sheep he called would make one fold. I thought at the time that the Latin for six was sex, and that the number of the Beast is 666. Is then sex beastly? I think I will leave you to puzzle out the difference between 6 and 666 and 6 fold in substitution of one fold; for the number of the Beast is a mystery.

(p.267).

I feel that everything is sort of related to everybody and that some people are far more susceptible to this theory of relativity than others because of either having previous ancestors connected in some way or other places or things, or because of believing, or by leaving a trail behind when you walk through a room you know. Some people might leave a different trail and all sorts of things go like that.

(p.267).

The writers add that the last patient "claimed that this statement was a clear one, and showed signs of anger when asked to elucidate it".

Describing "Deborah's" state of mind while in a mental hospital, Hannah Green in her book "I never promised

you a rose garden" (1973) refers to her use of a language (Yri) "whose metaphors used 'broken' to mean 'consenting' and 'third rail' to mean 'complying'.... Uguru,... was 'dog-howling' and meant loneliness". (p.62). She speaks of "the Yri logic and frame of words" (p.62) which, although incomprehensible to the doctors and nursing staff, were perfectly meaningful to her, e.g.:

'Recreat', Deborah said, 'Recreat xangoran temr e xangoranan. Naza e fango xangoranan. Inai dum. Ageai dum.' ('Remember me. Remember me in anger, fear me in bitter anger. Heat-craze my teeth in bitterest anger. The signal glance drops. The Game' - Ageai meant the tearing of flesh with teeth as torture - 'is over').

(Green 1973, p.62).

Another example from the same source reads:

'There was a gear...' she cried aloud, and it came in Yri loud and mingled with strange words which were not hers. 'There was a gear all teeth, two at least world-caught. And now nothing, nothing engages with the world!'

(Green 1973, p.62).

Some shorter examples from other sources read: "Do you know nase I'm sitting here... nice log... do I say those things... right a good nay... do you know what appetch I don't know.. whaw appetch. That is a phona" (Despert 1941: quoted by Froeschels 1946), "That means feline absence and rodential job" (Benjamin 1964), "Because it is a sort of hydrantic evering" (Cameron 1964).

#### Schizophrenic features are hypnagogic features:

Practically all of the schizophrenic thought disturbances are encountered in hypnagogia. For instance, McKellar (1957, p.47) reports the case of a subject who at the end of an hour-long hypnagogic experiment was asked to explain the meaning of the proverb "Too many cooks spoil the broth". "In her drowsy state", McKellar says, "she was unable to do this, but reported an immediate image of 'little men in white overalls... there were two... two men'. The image suggests not merely an interesting concretization of cooks in white overalls, but also a product of clang association,



'too many - two men'".

Hypnagogic thinking may also contain pompous nonsense pseudo or genuine witticism, neologisms, symbolic meanings - all of which may, at the time, be meaningful to the subject. Here are four examples from Schjelderup-Ebbe (1923): "He is good as cake double", "The pencil holds well. To the sidewalk with Tell too", "Trifler, oh Brussels, bring a sail", "Conceit is not often being named a phantabilit". Two examples from Trömner (1911, p.349) read: "He regally escaped into his existence", "Yellow red and protestant means the sooner the better". Trömner comments that "they completely correspond to the word-salad of dementia praecox: nonsense of content but retention of linguistic structure". Archer (1935) reports the following personal example: "A leading clerk is a great thing in my profession, as well as a Sabine footertootro" and comments that "I had an impression on awakening that the last two words meant 'feminine inspector' - that that was the idea in my mind, though I had been seized with aphasia in trying to express it". An experience almost identical to that of Archer is reported by Froeschels (1946, p.827) who, on falling asleep, had the thought: "Most important in every-day life are the littions", and on which he comments that at the time he "was fully aware of the meaning of 'littions' namely 'trifles'". Froeschels (1946, pp.827-829) offers twenty-eight examples taken at random out of a much larger number. Here are a few of them as numbered in the original for identification and discussion purposes: "(6) One of the most characteristic features is the acceleration of the sixteen", "(9) They are exposed to verbally intellection", "(13) Understanding is adversability to understanding", "(22) A Burul house schillinger to cook plate", "(23) Amarande es tifiercia", "(24) Knows how tampala sounds", "(26) And find that all with syphilis is immediately", "(28) To produce easier spice primitive of that speace (or spiece?)".

Similar examples are presented by, among others, McKellar (1957), van Dusen (1972), and Oswald (1976) who also gave instances of hypnagogic witticism. Oswald (1976 p.44) offers a choicy one in doggerel verse that appeared in the 'New Statesman' during 1960:

Only God and Henry Ford  
Have no umbilical cord.

Froeschels (1946, p.831) compares aspects of hypnagogic thinking to that encountered in schizophrenia and epilepsy and in the speech of small children, dysarthrics, dyslalics, dysphasics, paranoiacs, the feeble-minded, and aphasics "especially in the so-called parapraxism".

Apart from the above which are examples of hypnagogic thoughts or voices heard in one's own or in some other recognizable or unrecognizable voice, there are numerous examples of hypnagogic-hypnopompic speech, that is, speech uttered by the subject while falling asleep or awaking, and which illustrate thought disturbances like those encountered in schizophrenic speech. For instance, McKellar (1979b, p.105) offers an example in which "one young woman awoke to find herself murmuring 'put the pink pyjamas in the salad!'" Hollingworth (1911, p.103; see also 1936) gives an example in which responding to his wife's "Let's hurry and get there by ten o'clock", he replies drowsily "Oh, that's easy, I could get there by a nickel to ten". Maury (1857) noted that if spoken to while falling asleep

I do not give an accurate account of what I see and of what I hear. I cannot distinguish things easily and I make very bad mistakes. I cannot grasp the meaning of what is being said and I can only hear words; I sometimes respond to these words, but my answer does not correspond to the meaning of the sentences addressed to me. The sound of a word recalls in me an idea which is linked to it and which may have no connection with the sentence uttered by my interlocutor.

(Maury 1857, p.165).

Schultz, (1930, p.54) mentions the case of a 28 year old woman who reported that while in hypnagogia she "felt a strange compulsion to pronounce words that I did not want to say and words that did not make any sense at the time, like: wild flower, wild animal. I knew that I was saying them and I was ashamed of myself in case anyone heard, but I had to say them" (p.54). Another subject reported:

... as if in a semi-dream - I do not know how to describe this condition, but I know for certain that I am still awake - it seems to me as if someone wants to break into my house. It has happened that I jumped out of bed, ran, tried to escape and also took my child, only the locked door and the cry-



ing of the child (who is 11 years old and strong) brought back my consciousness and then I laid down again;... At a similar occasion I shouted at my neighbour: 'what do you want with the night dishes?' She got up and answered that she could not understand me.

(Schultz 1930, p.55).

Schultz (1930) cites a number of cases which show in operation schizophrenic features and phenomenology such as : the unusual frequency of hallucinations, the bizarreness of associations, the complex character of hypnagogic hallucinations, extending to more than one sensory organ which may give a feeling of reality (case No. 10), the symbolic and phantasy-like way of coping with one's hypnagogic experiences, the attitude with which one regards these experiences, that is, without any trace of surprise as something normal arising from one's own personality (case No. 11), visual hallucinations serving as the basis for hypochondriac delusions, diffused and very lively objectified physical sensations (case No. 12), the complexity of the thinking process, the shifting or abolition of borders between the Ego and the external world, the cosmic identification, the experience that the world is ending.

An example of hypnopompic speech given by Mintz (1948, p.549) illustrates the presence of symbolic meaning, of metaphor and analogy, "inexact approximation" (Cameron 1939), and a state of certainty (awareness of significance) regarding the validity of the subject's frame of reference which is not to be doubted by outsiders (i.e., by waking, logical frames of reference):

A 24-year-old married woman, normal, woke up one morning; her husband was already up. Seeing him, she said, 'Light the towel' (the couple was Russian; another translation of the Russian phrase is 'set the towel on fire'). Her husband asked her what she meant. She repeated, 'Light the towel'. He again indicated lack of understanding. Thereupon she became angry; she said that he obviously understood what she had meant but was pedantic enough to insist that she should express herself precisely. He should light the towel, that is (after a hesitation), raise the window shade. Subsequently, when the husband stated that he still did not understand why she had spoken of lighting a towel, she explained that lighting (or setting on fire) makes light and that a

towel and a window shade are similar in shape.

(Mintz 1948, p.549).

Another example from Froeschels (1949, p.21) reads "I say: 'Not afterwards, but immediately', knowing that 'immediately' means 'into three equal parts'".

I shall dwell on these examples for a while as I believe they provide good illustrations of a number of thought disturbances, or aspects of a core thought anomaly, whose study and analysis may shed light on their functional presence both in hypnagogia and in schizophrenia.

To begin with, there is the clear presence of symbolic meaning in that the subject in Mintz's example uses the expression "to set on fire" to stand for "lighting" and "towel" for "window shade"; in Archer's example the word "footertootro" stands for "feminine inspector"; in Froeschel's "littions" stands for "trifles" and "immediately" for "into three equal parts". These examples are not dissimilar to H. Green's (1973) "Broken = consenting", "third rail" = "complying", and "Uguru" = "loneliness". Moreover, the utterances themselves as well as both the mental attitude (viz., certainty) and explanations of the subjects strongly suggest that the latter are not only employing a frame of reference structured according to particular rules but also that, perhaps, the very essence of these rules is to allow the crossing of a number of frames of reference. The result is often an expressed identity between normally unrelated concepts. This may in fact be the cause underlying many cases of neologism, that is, neologisms may constitute the audible product of the confluence and condensation of a number of frames of reference and may encompass anything from known words with slight but often ungrammatical changes in their structure to completely new words that stand for simple or complex meanings. The experience-utterance of neologisms, symbolic words or sentences, and metaphors in both hypnagogia and in schizophrenia may be accompanied by a feeling of certainty regarding the truthfulness and validity of the



statements made, as it is illustrated, e.g., by the Mayer-Gross et al (1969) third example in respect to schizophrenia and the Schjelderup-Ebbe (1923), Archer (1935), Froeschels (1946) and Mintz (1948) examples in respect to hypnagogia.

The loosening of ego boundaries, and hypnagogic logic:

In analysing his own hypnagogic experiences Froeschels (1946) argues that in the transitional state between waking and sleeping

two levels of the personality were in conflict with each other. The one was the logical thinking with its corresponding feeling of certainty - which we are accustomed to perceive while in the state of being awake; the other was an additional mental process which behaved as if it were logical and carried with it another feeling of certainty. The logic and the joined feeling of certainty as perceived in the state of being awake rejected as wrong the corresponding processes that were going on in the state of transition.

(Froeschels 1946, p.826).

It must be noted that Froeschels recorded his experiences from a stage of hypnagogia in which "the waking mind had not been completely obliterated" (p.825) and in which the latter "felt irritated" and "reacted" against the emerging phenomena. Thus he distinguishes between two kinds of a feeling of certainty and considers the one accompanying hypnagogic thinking as inferior to that "we regularly attain through the logical work of our waking mind" (p.826). However, had he allowed himself to progress deeper into hypnagogia the feeling of certainty would most certainly have increased in proportion to the increase of his withdrawal from wakefulness and in proportion to diminishing critical attitude.

As argued in other sections in this paper, the feeling of certainty, conviction, or sense of significance may occur on its own unrelated to any logical activity, and its presence in logical activity is no guarantee of the

truth or validity of logical transactions. Experientially, the feeling of certainty is an accompaniment of facts, be these thoughts, perceptions, sensations, or hallucinations, and the degree of the feeling of certainty appears to be a function of attention paid to these thoughts, perceptions, sensations or hallucinations. In the ordinary waking state the feeling of certainty is checked and controlled to a considerable extent by assumptions and generalizations of varying degrees of validity. It is important to note that (a) in a logical activity, e.g., in carrying out a syllogism, it is the conclusion that furnishes us with a considerable degree of a feeling of certainty (or intellectual satisfaction), and (b) in experience in general it is the degree of absorption (closeness of subject to object) that gives rise to a corresponding degree in the feeling of certainty. In hypnagogia, especially in the later stages, attention is automatically absorbed thus closing the gap of intellectual reflection and diminishing the ability or tendency of the waking mind to take distinct and 'valid' steps in logical activities: for instance, it may leave out the major premiss of a syllogism or appear starkly as a statement-conclusion without explicit premisses, i.e., merely as a fact.

The differences between waking and hypnagogic logic may be summarized thus:

Waking mentation is based (a) on distancing the subject from both the object and the mental activity, and (b) on employing abstract methods, e.g., the syllogism, generally considered to be valid forms of thinking, in order to draw conclusions.

Hypnagogic mentation (a) closes the gap between subject and object blurring their differences and in many cases identifying the one with the other (i.e., loss of ego boundaries), (b) diminishes or abolishes the gap between subject and mental activity (non-reflection) thus leading to a kinesthetic or empathic method of knowing which 'enables' the subject to identify himself equally with any concept resulting in the linking, overlapping or total identification of one concept with another.



The presence of the feeling of certainty often accompanying hypnagogic and schizophrenic experiences may be due to the tendency of the subject to be absorbed-withdrawn into spontaneously occurring thoughts, perceptions, images, etc. Such absorption-withdrawal would explain both the feeling of certainty (there is no room for doubt) and the tendency to relate ideas, concepts, one's ego etc., to other entities, events and so on. Clinicians and psychologists frequently complain of their inability to make contact with schizophrenic patients. Others report cases where during therapy schizophrenics have apparently communicated with them empathically on a subconscious level. It would appear that the schizophrenic, like the hypnagogist, has withdrawn his attention from the normal perceptual analytic environment and is functioning primarily in an absorbed imaginal world (see, e.g., van Dusen 1972). Like the hypnagogist, the schizophrenic also tends to lose his ego boundaries. This is a feature of paramount importance as it seems to lie at the root of most experiential-cognitive phenomena encountered in both conditions. The loosening of ego boundaries (LEB) has many ramifications and is represented, or manifests itself, at various levels of the organism's experience encompassing body schema alterations and/or dissolution, internalization of external sensations/perceptions, identification with other egos, blurring, overlapping or assimilation of concepts, dissociation.

We have already seen that in hypnagogia body schema alterations may take various forms and that not infrequently the hypnagogist may lose his body schema altogether or that events outside himself are experienced "as something happening to and around his own body" (Isakower 1938, p. 339). Isakower (1938) points out two consecutive processes characteristic of sleep onset: "(1) a disintegration of the various parts and functions of the ego; and (2) a diminution of the ego's differentiation". This is in

agreement with my proposition above that the LEB is the initial and initiating factor lying behind most hypnagogic phenomena. As Isakower (1938, p.337-38) further notes, in the progression of hypnagogia the boundaries of the "body ego" (body schematization and identification) "begin to be blurred and to become fused with the external world... perceptions are localized as sensations in a particular bodily region and at the same time as the processes in the external world.... It is natural to conjecture that the structure of the body ego in this state is comparable to that of the immediately post-natal ego". At such a regressed state it is not unreasonable to assume that one is inundated by a "buzzing, booming world". This inundation, springing as it does from the LEB, may account for the schizophrenic blurring of concepts and for the phenomenon of schizophrenic ambivalence. At the body level the loosening of body schema may account for many catatonic phenomena such as catatonic postures; the 'inundation' may account for catatonic word-salad (cf. Trömmner 1911).

McKellar and Simpson (1954) drew attention to hypnagogic experiences of macropsia and micropsia and to kinaesthetic hallucinations of body schema alterations noting that the latter are "similar to the sensory experiences that form the basis of psychotic delusions of bodily change" (p.272). At another level, the LEB and the indiscriminate appearance of perceptions, images, thoughts, may acquire special significance, again leading to delusions (e.g., Hollingworth 1911; van Dusen 1972). For instance, as Isakower (1938) points out,

the fully developed delusion that the world is coming to an end, as we meet with it in schizophrenia, is commonly preceded by manifestations of ego-disintegration, accompanied by a hypersensibility to external impressions and by temporal and spatial distortions of the objects perceived... In such a condition the patient himself often feels that the difference between waking and sleeping has vanished.

(Isakower 1938, pp.340-341).

Isakower's description of the preceding features of a schizophrenic delusion are, of course, to be met with also in hypnagogia (see Schultz 1930). Moreover, these



are not singularly the prodromes and accompaniments of a specific delusion, viz., that the world is coming to an end, but are to be found with the genesis of all delusions: and the study of hypnagogia can undoubtedly shed considerable light on this.

As argued above the hypnagogic withdrawal-absorption ushers in the LEB with its various manifestations. The LEB is to be thought of as a core event and its manifestations make their appearance on all the experiential levels of the organism. We have seen that at a particular stage of hypnagogia there is a hypersensibility to external impressions. These are not only felt internally kinesthetically but, due to the LEB on a higher (cognitive) level, they result in illusions or spatial distortions of physical objects as well as of images which, coupled with the accompanying absorption (fascination) acquire an, often unwarranted, significance. Evidence suggests that the fascination experienced here is very much like that experienced by a child absorbed in a game with his toys.

In such a state physical objects and images are merely posited and their strongest and most concrete features are taken to represent them, or even totally replace them. We must also bear in mind that in this state subconscious and unconscious activities are very much to the fore bringing forth their own 'interpretation' of what is the strongest and most representative feature of an object or image. These features or qualities may not necessarily be the same as those thought by the waking mind to be the most important in characterizing an object or concept.

In respect to schizophrenia, Matussek (cited by Fish 1961) proposed the existence of two kinds of delusional perception. In the first, there is the involvement of verbal associations. Fish (1961, p.829) gives the example of a patient of his "who heard a floorboard squeak as a colleague stood on it and looked down to see the linoleum. The word 'Lino' came into his mind and was followed by the thought 'No lie', which he took as an instruction from his colleague that he was not to lie". In the second variety, according to Matussek, there takes place a

loosening of the coherence of perception as a result of which 'essential' properties of the object become prominent. 'Essential' properties, according to Metzger (1954), are one of three types characterizing percepts, the other two being structural properties and total quality properties. Whereas "structural properties are those of arrangement and organization such as figural form, brightness, colour profile and so on" and "total quality properties are material properties which are not simple sensory qualities independent of structure", Fish (1961, p.829) explains, "Essential properties are expressions of the essence of the object and include all the physiognomic or expressive properties such as character, ethos, habitus, mood, emotional value and so on... Although they have been called 'subjective impressive qualities' or subjective impressions, Metzger insists that they are perceptually given properties which immediately make an impression on us and affect our own essence". But, whereas in normal waking life these impressions are kept in perspective by the presence of the other two varieties, in schizophrenia (and in hypnagogia) they acquire exceptional significance due to the LEB and the resultant internalization of objects, or rather the internalization of those properties of the object which are felt to be essential.

Writing on Conrad's (1958) five-phase classification of schizophrenia Fish (1961, p.830) says that the second or apophanous phase is divided into two subphases, namely, "apophany of external space and apophany of internal space. In the first, all external events which are experienced acquire a new significance, while in the latter internal psychic events acquire special meaning". He further proposes that "this undue prominence of essential properties explains the misidentification of persons which is common in the apophanous phase. Unknown persons may be recognized as friends or acquaintances, while relatives and friends are not recognized as such by the patient. The emerging essential properties can be considered as causing these confusions of identity" (p.830).

In hypnagogia we encountered these anomalies of



recognition as the déjà vu and jamais vu phenomena, and although these may be an effect of the coming into prominence of the essential properties of an object, image or concept, in their turn these properties, as argued above, are brought into prominence by the LEB.

In respect to "apophany of internal space" (Fish (1961) says that

once internal space is affected, there is a loosening of the coherence of the mediating processes. Memory images may lose their connection with the total field and be experienced as delusional inspirations. Thought broadcasting in which the patient's thoughts become manifest to the environment can be regarded as the reverse of delusional perception, where a new significance of a perception becomes manifest to the patient. The loss of adequate figure ground relationships in conceptual thinking naturally leads to the patient hearing his own thoughts spoken aloud, so-called Gedankenlautwerden. As the disorder becomes worse all personal indication of the thoughts is lost and hallucinatory voices occur. Bodily hallucination can be understood as the effect of apophany on bodily sensations and the body image.

(Fish 1961, p.830).

In the above quotation there are a number of statements bearing directly on the state of hypnagogia and which are worth looking into more closely. First, there is the opening sentence in which Fish states that "once internal space is affected, there is a loosening of the coherence of the mediating process". This condition can be comfortably interpreted as the result of the LEB. As proposed above, one of the manifestations of the LEB is the blurring and overlapping of concepts and the relating or assimilating of concepts normally unrelated to each other. This is brought about by the fascinated passive attention of the subject which allows for the emergence of the 'essential' properties of concepts with which the subject then identifies. We might say that the 'essence' of the subject acts as a link between the 'essential' properties of two or more concepts (objects, images, etc.). This might be interpreted as a form of withdrawal from one's immediate environment and thus account for the inability of psychiatrists to make contact with their patients. It might also account for the fact that delusions mostly revolve round

the self, religion, and sex, i.e., what might be considered 'essential' preoccupations.

Second, in hypnagogia as in schizophrenia memories are disturbed although I would disagree with Fish in that I do not think that delusional inspirations are singularly, or even primarily, related to disturbances of memory. In hypnagogia there is a variety of memory phenomena. In keeping with the argument that in hypnagogia there is a considerable degree of regression (in a temporal sense) Kubie (1943) has demonstrated "the recovery of repressed amnesic data". Before him, Maury (1857) had also given examples of recovering forgotten memories. The phenomena of *jamais vu* and *déjà vu* have also been observed: in *jamais vu* known objects and events may be experienced as if for the first time (see e.g. Slight 1924, and Chapter 11); also, difficulty may be experienced in recalling known names and concepts, as in Archer's (1935) example above, which demonstrates the phenomenon of 'thought blocking'. In *déjà vu*, it is likely that the sudden strong conviction accompanying the sense of familiarity concerning an event which is experienced as having already taken place in the past may encourage the emergence of delusions.

On the other hand, the feeling of sudden discovery in the phenomenon of *jamais vu* may indeed give rise to delusional inspiration, although in the state of hypnagogia this feeling may not necessarily emerge in a climate of real paramnesia (cf. Hollingworth 1911). Indeed, the feeling of inspiration, in hypnagogia and elsewhere, may appear as the effect or accompaniment of the coming together of two or more frames of references in a novel relationship. In hypnagogia this is effected by the LEB that promotes divergence of thinking and the emergence into prominence of properties of concepts, objects, events, etc., which are fascinatingly grasped as 'essential'. If later, with analysis, these properties are shown to be validly essential, both as indeed important properties and as important in the cultural and intellectual milieu in which they are expressed, they may come to be seen as real inspirations (see chapter on 'Creativity'). If, having not been



shown to be important properties of the relevant concepts, events, objects, etc., and/or having not been seen as such in the subject's cultural setting, the subject insists on their 'essentiality', he is then thought to be deluded. I do not intend to discuss at this point whether labels such as 'schizophrenic' and 'genius' are or are not justifiably employed but merely to argue for a hypothesis based on phenomenological data which I hope later to support with neurophysiological evidence.

Third, Fish makes reference to thought broadcasting or *echo de pensée* and, speaking in gestalt terms, he rightly attributes this to the loss of adequate figure ground relationships. But, again, the latter is, according to my hypothesis, brought into play by the LEB which allows for the blurring of distinctions between figure and ground. A fourth point made by Fish is that as the disorder worsens complete voice hallucinations occur. In fact, the study of hypnagogia may provide us with evidence for a progression of phenomena concomittant with a gradual LEB which may shed light on similar occurrences in schizophrenia. That is, in hypnagogia there appears to be a gradual change in the character of the thoughts and voices heard. Evidence shows that at the outset the subject is engaged in day-dreaming and rumination. As the LEB advances and he becomes more withdrawn and absorbed the rumination begins to become externalized (broadcast?); next words and sentences are heard in one's voice, and then in other recognizable voices (e.g., one's father, mother, friends, etc.) and semi-recognizable ones, that is, distorted voices but somewhat familiar. Finally are heard totally unrecognizable voices and voices that are thought to belong to personages and entities the subject has never or could never have been acquainted with (e.g., famous historical figures, saints, God, etc.). The content of what is heard is, likewise, changed gradually from that containing personal reference to a more impersonal one.

The gradual LEB naturally leads to the diminishing and eventual dissolution of defining distinctions between subject and object. This implies the ever decreasing

presence of self awareness. As Maury (1848, p.29) observed, in hypnagogia the mind "ceases to have a clear awareness of the self, and it is to a certain extent passive, absorbed in the objects which strike it; it perceives, sees, hears, but without noticing that it is perceiving, seeing, and hearing", that is, the subject is fascinatingly absorbed in ongoing activities. Elsewhere (1857, p.165), Maury also suggested that for the subject in hypnagogia the sense of time and space loses its clarity or is lost altogether; this compares well with Isakower's (1938, p. 341) observation that in schizophrenic delusions there occur "temporal and spatial distortions".

Hypnagogists, madmen, and absent-minded individuals:

Maury (1857, pp.165-167) argued that the hypnagogist, the madman, and the absent-minded person appear to behave in the same manner as a result of psychological withdrawal, and although he attempts to distinguish between the form of withdrawal present in hypnagogia on the one hand, and that present in madness and in absent-mindedness on the other, we shall presently see that the grounds for such distinction are not very strong.

First, he made the important observation that in hypnagogic speech the subject's utterance in response to a question is essentially a response to internal activity of a special kind. He writes:

... it sometimes happened to me that, by a retrospective reflection, I managed to grasp a link between several of these words and what was happening in my mind. These incoherent sentences express the idea or the image that was in front of my eyes at the very moment when my interlocutor alerted my attention with his question. One talks to me, I immediately answer and I express what I was seeing at the very moment when I was questioned. One day, for example, the person who was reading asks me a question on the passage he had just read; I answer: 'There is no tobacco here', which had no relation in words nor sounds with the sentence addressed to me. My answer naturally provokes a noisy hilarity and my drowsiness suddenly disappears. I had only a vague awareness of what I had just said, but my memory still retained a few of the idea-images which had taken place in the eyes of



my imagination; and I remembered then that the idea of tobacco had come to my mind in the middle of a disorderly train of a host of words and ideas linked to one another. And why that dream? My sneezing provided the explanation: a few grains of tobacco which had remained in my nose, after I had accepted some tobacco from a snuff-box, acting on my olfactory membrane conveyed to my brain the sensation which, at the time, I was not aware of.

(Maury 1857, pp.165-166).

Then, having related the above with the kind of mentation encountered in childhood, idiocy, and old age on the grounds of their sharing a characteristic factor, namely, the inability to focus active attention, he further compares hypnagogic passive absorption with that of the madman and the absent-minded person making the important observation that the actual absorbed state all these people find themselves in is the same although they differ in (a) the manner in which they severally reach it, and (b) their ability to respond to stimuli in their immediate environment. In respect to (a) he says that whereas hypnagogic absorption is the result of weakness of (active) attention, that of the madman and the absent-minded person is achieved by intense (active) attention; regarding (b) he argues that whereas the latter two, although absorbed in their thoughts, can communicate verbally with their environment when interrupted, the hypnagogist "does not have the strength to apply his attention to the object he is shown, and his talking is only an echo of the idea he is mechanically contemplating" (p.167).

A number of important points are made in Maury's observations and discussions above which deserve further discussion and analysis as they relate directly to my current arguments. To begin with, Maury's example demonstrates clearly hypnagogic withdrawal and absorption: the hypnagogist is so withdrawn and absorbed in his internal (mental) environment that external stimuli can only manage to elicit what is clearly a response not to the latter but to the former, i.e. to current imaginal activity, thus throwing some light on the origins of 'irrelevant' hypnagogic utterances and showing them to be irrelevant only

in an external frame of reference. Moreover, due to the graded nature of hypnagogia, there are stages in which the hypnagogist may be able to respond to (a) a greater or (b) lesser extent to his external environment and even balance himself between the two environments in a state of double-consciousness. An example of (a) might be Hollingworth's (1911) response "Oh, that's easy. I could get there by a nickel to ten", showing an inability to transfer completely to an external environment and instead crossing two frames of reference, those of time and money. Maury's example and that of McKellar's "Put the pink pyjamas in the salad", among others, might serve as illustrations of (b). Of course, McKellar's example, like those of Schjelderup -Ebbe's (1923), Archer's (1935), and others, also show that hypnagogic-hypnopompic utterances may be mere responses to the subject's internal environment and are mostly 'egocentric' (Piaget 1932), that is, they are not addressed to anybody in particular.

Further, Maury's example is an illustration of how in hypnagogia a subliminal perception acting subconsciously gives rise to an image and an idea in the midst of an ongoing "disorderly train of a host of words and ideas" which image or idea then engages the hypnagogist's absorbed attention. In Maury's case the perception although subliminal led to the emergence of a logically relevant idea. However, this is not always the case. In many instances the sensations, including proprioceptive ones, are transformed into symbols as in the case of Silberer's auto-symbolic phenomena (see also, e.g., Vihvelin 1948). Moreover, although physiologically there is an increase of sensitivity of, for instance, auditory signals from the external environment, as hypnagogia progresses these signals tend not only to be transformed but also incorporated in ongoing imaginal activities. Thus at any given level the hypnagogist is presented with a gradually altering external frame of reference which is continually transformed and incorporated into an internal space which is itself passively and absorbedly attended to and which is populated by imagery whose coherence is based often on



subconscious, mediate associations. It would seem then that in hypnagogia the subject is primarily withdrawn and passively absorbed in internal, mental space, and that, depending on the depth of the state, external input would reach him distorted or transformed in various degrees. It might thus be argued that as hypnagogia progresses towards sleep the perceptual barriers commonly thought of as appearing in this state are not true barriers, in the sense of preventing information reaching the subject, but rather transformers allowing the flow of information but changing it to fit the requirements of the prevailing internal logic, a logic which is directly the result of the LEB. Due to the latter, the subject's normal sense of distinguishing between subject and object is relaxed and, coupled with psychological withdrawal, many phenomena occurring in this state are experienced both as taking place 'internally' (external input having undergone certain transformations and been incorporated into ongoing imaginal activities) and 'externally', i.e., as being "out there" and beyond the subject's control. The contradiction here is only apparent and is resolved when we reflect on the state of absorption the subject is in: a state of fascinated attention characterized by lack or diminution of self-awareness, especially somatic self-awareness. As argued in an earlier chapter, this state of fascination may be brought on either by passive (receptive) or intense active attention. In this respect the hypnagogist, the madman, and the absent-minded professor may be functioning in very similar states. Moreover, and contrary to Maury's argument, (a) the madman's absorption, like that of the hypnagogist's, is brought on by passive attention, and (b) neither the madman nor the absent-minded person differ from the hypnagogist in their readiness (or rather, lack of it) to respond to signals from the external reality.

In respect to (a) there are the well-evidenced phenomena of schizophrenic disturbance of volition (see e.g., Bleuler 1911; Berze 1914; Mayer-Gross et al 1969). These phenomena have been studied and analysed under headings such as 'Primary insufficiency of psychic activity'

(Berze 1914) and 'Ambivalence' (Bleuler 1950) indicating the patients' passive attitude and inability to concentrate and follow one line of thought or action without distraction from other 'frames of reference'. This weakness of volition is often attributed to disturbance of the self. Indeed, as Mayer-Gross et al (1969, p.270) note, "some workers have made the weakness or loss of the self the central symptom of schizophrenia. The passivity phenomena in which this loss is best seen are indeed very characteristic of schizophrenia. The patient tells us that his thoughts, feelings, speech and actions are not his own". And, as in hypnagogia, "there are all transitions from full self-identification with the abnormal behaviour to complete passivity with full insight into the strange and alien nature of the experiences".

Significantly, and in respect to my argument about the primacy of the core phenomenon of LEB, Mayer-Gross et al (1969, p.271) further note that "in acute schizophrenia, a loosening or blurring of the boundaries of the self is often experienced: the patient feels that he is part of the plants, animals, clouds, or of the whole world, and that they are parts of himself". If, together with this, we bear in mind what these authors said above, viz., that the patient speaks of his thoughts, feelings, etc., as being "not his own", we arrive at the same apparent contradiction met with in hypnagogia and discussed above, namely, the phenomenon in which thoughts perceptions, etc., are experienced as occurring inside the subject and yet unfold "out there" and beyond his control or instigation.

In respect to (b), evidence again shows that both the madman and the absent-minded person are so absorbed in internal activities and withdrawn from their immediate physical environment that they either do not respond to external stimuli or else they respond erroneously, that is, their responses are inappropriate. In the case of schizophrenia the patient, who is generally thought of as being withdrawn, responds inappropriately both intellectually and emotionally. That is, his thought content and



grammatical-logical structure of his verbal responses appear incongruent with ongoing external reality and stimuli. Indeed, emotional bluntness and incongruity of affect were the phenomena responsible for giving rise to the term 'schizophrenia' coined by Bleuler. Flatness of affect (Foulkes et al 1965) and detachment (see chapters 4, 7, and 11) are, as we know, also found in hypnagogia. In the case of absent-mindedness one may be referred to the numerous reports - admittedly anecdotal - of the behaviour of absent-minded professors. An example from antiquity demonstrating incongruity and flatness of affect might be that of Archimedes' who responded to the invading soldier about to spear him by saying "do not disturb my circles"; his famous "Eureka!" incident also demonstrates the degree of detachment from his physical environment and his absorption in another frame of reference. For the sake of comparison we may remind ourselves here of one of Oswald's (1962) examples in which a drowsy subject, having bent down and kissed the EEG tape, reported: "Leant forwards and downwards to plant a kiss upon the unmarried letters. £Coohch" (p.186). As for flatness of affect, this has been noted by various workers (e.g., Alexander 1909; Leroy 1933; Foulkes and Vogel 1965; MacKellar 1979a, 1979b). MacKellar(1979b, p.96) remarked that "some of the most hair-raising visions can be watched by the imager with surprising detachment".

In both hypnagogia and in schizophrenia the subject, as noted above, may not be totally withdrawn thus retaining or re-establishing intermittent contact with his environment and having some insight into his imaginal experiences. However, even with the possession of such an insight the subject in either case is not always capable of thinking and acting entirely outside the frame of reference created by his psychological withdrawal-absorption. Hence the phenomena of delusional interpretation, that is, the attempt by the subject to rationalize his imaginal experiences and make them fit into the intercurrent frame of reference of the objective world. In hypnagogia this is often seen in the subjects' efforts to explain and

justify their strange verbal responses. For instance, in Mintz's example the subject justifies her strange verbal expression by explaining the symbolism hidden in it. Singer (1976, p.47) writing of his own experiences says: "I might actually fall asleep in midsentence, awaken abruptly and make a bizarre comment, notice the puzzled look on my friends' faces, and hastily seek to tie in the unrelated remark to the previous waking flow of conversation".

#### Delusions as the result of the LEB:

Primary delusions, as distinct from delusional interpretations, are also found in hypnagogia. These are characterized by a sense of conviction and an awareness of significance. In respect to schizophrenia Jaspers (1963) differentiated between delusional perceptions, delusional ideas and notions, and delusional awareness. In the first group of experiences the patient seems to endow an apparently normal perception with unaccountable significance. In the second, a passing thought suddenly generates unwarranted conviction. In the third, "the patient feels suddenly charged with knowledge of world-shaking importance, unrelated to any previous thought or perception of a relevant kind" (Mayer-Gross et al 1969, p.274). Although the phenomena of the third group are not infrequently encountered in hypnagogia, (see e.g., Schultz 1930, p.56) and chapter 10), those in the second group are much more commonly reported and they most often appear as the conclusions with inadequate or missing premises spoken of above. That is, a passing thought suddenly appears unjustifiably pregnant with meaning, a meaning which may then become explicable to the subject as being contained in a conclusion-revelation behind which may lie the implications of a complex series of premises. In regard to delusional perceptions these may be seen in hypnagogia as the effects of misperception. In schizophrenia there is evidence (e.g., Weckowicz and Blewett 1959) that in some cases delusions as well as abnormal



concept formation may be traced to disturbances of perception and cognition. Mayer-Gross et al (1969, p.273) attribute the experience of primary delusion to disturbance of symbolization.

However, it seems to me that, whether we speak of disturbances of perception and cognition or disturbance of symbolization, the actual experience involves the seizing by the subject or patient of properties of one or more perceptions, thoughts, or concepts which properties are felt to be essential, i.e., as expressing the essence of the said perceptions, thoughts, or concepts. And, as argued earlier, this seizing of, or attraction by, the essential properties takes place within a setting of LEB which, because of its character of diverging, 'spreading', and blurring, tends to shift the importance placed by the waking mind on certain properties. Moreover, as argued above, due to the LEB more than one frame of reference comes into play simultaneously. Thus the subject or patient may be presented with a percept, an image, or a concept that suddenly acquires a significance which is beyond and unrelated to that normally ascribed to it. For instance, a schizophrenic may see three chairs in a restaurant and suddenly have the realization that God is conveying to him an important message through their particular arrangement. Likewise, a hypnagogic subject may be inundated with an awareness of significance symbolically conveyed by a hypnagogic vision or audition (see e.g., Schjelderup-Ebbe, 1923; Archer 1935; Froeschels 1946; van Dusen 1972, 1975).

The sense of conviction encountered in primary delusions and many hypnagogic experiences is also found to accompany hypnagogic and schizophrenic hallucinations. Its occurrence in the former has been discussed in other chapters. In regards to its presence in schizophrenic hallucinations Mayer-Gross et al (1969, p.275) note that the latter's "'unreal' appearance, even if recognized, does not reduce the patient's belief in their reality and importance. They are, in fact, frequently accepted with the same conviction as primary delusions". And, although

many schizophrenic hallucinations are thought to occur in a setting of clear consciousness this is by no means always the case. So much so that Berze (1914) attributed their appearance to reduced mental control, and C. Schneider (1925), equating the schizophrenic with the hypnagogic state, regarded hallucinations as the inevitable outcome of the general condition (cited by Mayer-Gross et al 1969, p.274).

An interesting psychological implication arising in arguing for the emergence of the 'essential' properties of a concept, etc., in schizophrenia and in hypnagogia is that such states of withdrawal and fascination in which essential properties are what strike the subject as such, should be reflected in the mental activities of the subject. That is, if, as I am proposing here, a core factor in both schizophrenia and hypnagogia is the LEB then this factor should be reflected in, among other phenomena, the subject's conceptualization. This, as I will try and show below, is indeed the case in both conditions.

In Mintz's example we saw how a window shade was indentified with a towel on the basis of their similarity of shape. Froeschels (1949) proposes that this tendency for identification without adequate discrimination is characteristic of hypnagogia, or "state of transition" as he calls it. He offers a number of examples to demonstrate this phenomenon of which I quote two:

(2) While in the state of transition, I say: 'There is no communication between the bathroom and the hearing center'. (The previous evening I had been working on a paper concerning the hearing center and the visual center.) In the scheme of Wernicke-Lichtheim, centers are drawn in circles and are connected by lines. My living room and the bathroom are connected by a narrow passageway. The narrow, connecting passageway is common to the scheme of Wernicke-Lichtheim and the two rooms.

(Froeschels 1949, p.20)

(8) Once in a transition state, I saw a piece of cloth suspended over the body of a woman. The right end of the cloth covered the body, while the remainder, approximately four-fifths of the whole, stood upright on the floor in an unknown way. The cloth is to be divided into three equal



parts. I say: 'Not afterwards, but immediately,' knowing that 'immediately' means 'into three equal parts'. So space (dividing into parts) and time (immediately) are taken for one and the same.

(Froeschels 1949, p.21)

Froeschels (1949) argues that, whereas for the waking mind the law of identity ( $A=A$ ) is strictly applied, that is, identification is based on the "essential character" of an object, in hypnagogia two or more persons, animals, things or functions are considered to be equal or identical on the basis of sharing one or only a few properties which may not necessarily be of the "essential character" of the object or function. Thus, in contrast to the waking mind which seeks to distinguish between equal and unequal (see also Froeschels 1947), hypnagogia tends to operate on the principle of similarity. Froeschels further argues that this principle or category is derived from the subconscious. He contends that

Of all the categorical terms which logic and epistemology has offered, similarity seems to be the one that characterizes best the basis upon which the subconscious works in the state of transition. But this term evidently does not mean to the subconscious what it means to conscious reasoning. The latter takes the feeling of similarity most of the time for a stepping stone on the way to thorough differentiation and identification. The subconscious on the other hand frequently considers similarity identical with identity, and does not bother with further 'research'.

(Froeschels 1949, p.24)

Thus,

...in the transition state, persons, animals, things, and functions, which may seem to the waking mind entirely different or slightly similar, may be identical. The transition state really identifies them. They flow together into a unity.

(Froeschels 1949, p.22)

That is, hypnagogia tends to relate, unify, and identify as opposed to differentiating and distinguishing. This is in agreement with my general proposition that hypnagogia is characterized by the LEB resulting in the blurring of

differences between one or more objects, concepts, etc.

Supporting the same argument is also Froeschels' comment that in hypnagogia the term similarity turns into that of identity and that entirely different objects or functions may be identified. This constitutes theoretical validation of the argument put forward earlier according to which mentation both in hypnagogia and in schizophrenia is primarily based on the subject's seizing what appear to him at the time to be essential properties of one or more objects or functions and that this is dependent on the core phenomenon of the LEB. In an earlier chapter I drew attention to the observation made by various workers (e.g., Silberer 1965; Slight 1924) that symbolization in hypnagogia tends not only to be subjective but also to unfold <sup>in</sup> imagery which carries particular meaning at the time of its occurrence, i.e., the "essential properties of a particular image may differ on different occasions. Further, the image may hit the subject as both literal and metaphorical: the former is evidenced by the realness of the experience and the latter by the feeling of hidden significance or the actual 'knowledge' of what it means. Schultz (1930, p.56) spoke of "the complexity of the thinking process" experienced by many subjects in this state, an observation which fits very well with my contention that both hypnagogic and schizophrenic thinking and speech express the crossing or mixing of two or more frames of reference.

#### Schizophrenic logic and hypnagogic logic: LEB:

Experiments carried out by Stransky (Oswald 1962) may show at this point how hypnagogic-like-cum-schizophrenic speech may be produced in normal wakeful individuals under the influence of "relaxed attention". Stransky asked his subjects to say quickly and without selecting whatever came into their head. The result was a catatonialike word-salad. As with hypnagogic imagery and speech the resultant sequences appeared meaningless and irrelevant, full of alliterations, metaphors, and, "a great deal of condensation, the gist of several sentences or words being



merged into one sentence or word, with many resultant neologisms" (cited by Oswald 1962, p.114), which, as already argued, are signs of the crossing of a number of frames of reference. Similar results were also obtained by Jung (1909).

A somewhat similar argument in respect to schizophrenia is put forward by Kasanin (1964, p.125) who says that "a schizophrenic cannot abstract one principle while he neglects others. He takes all possibilities into simultaneous consideration". Angyal (1964) also proposes that although the schizophrenic is capable of comprehending relationships he fails in the apprehension of what he calls "system-connections", that is, sets, or frames of reference (see also Bychowski, 1935). Thus, the schizophrenic appears to be shifting from one frame of reference to another in a disorderly manner. Or rather, as I see it, he cuts across two or more frames of reference simultaneously. This most often results in verbal absurdities which may sound witty or tragic.

An example from von Domarus (1964) illustrates how people, things, and functions clearly belonging to different frames of reference may be identified with each other in schizophrenia. He cites the case of a schizophrenic who believed that Jesus, cigar boxes, and sex were identical on the basis of all three being encircled, that is, "the head of Jesus, as of a saint, is encircled by a halo, the package of cigars by the tax band, and the woman by the sex glance of the man" (pp.108-109). Thus the feelings experienced by this patient when he spoke of Jesus, a cigar package, or sex life were the same - which may shed further light on the phenomenon of incongruity of affect, and delusional feelings and ideas experienced by both schizophrenics and hypnagogists (i.e., feelings of certainty, conviction, and significance).

In this example - and in agreement with my line of argument - the accidental of 'being encircled' is seen by the patient as the essential property identifying a person, a thing, and an activity, much the same way that in Mintz's (1948) and Froeschels' (1949) hypnagogic examples

the towel is identified with the window shade on the basis of their shape, and the dining room and bathroom with the Wernicke-Lichtheim centres on the basis of their sharing the accidental quality of being connected by a 'passage'.

Von Domarus further analyzes the nature of schizophrenic paralogical thinking by reference to the formal properties expressed in a syllogism. He uses as an illustration the Mode Barbara, e.g.:

A: Certain Indians are swift

B: Stags are swift

from which a schizophrenic concludes that 'certain Indians are stags'. More important, as von Domarus points out, the law of contradiction is excluded from paralogical thinking and its paragrammatical language since everything which lies outside the common intersection of A and B is irrelevant for the identification of A and B. In the same way, a saint, a cigar box and sex were considered identical because they were identified as surrounded: for the patient "neither the nature of the 'surroundings' nor that of the 'surrounded' made any difference in the conclusion drawn" (p.111).

Von Domarus makes the observation that "the paralogician concludes identity from the similar nature of adjectives" (p.111), that is, he accepts identity not on the basis of identical subjects but upon identical predicates, or rather upon one common single predicate. Similarly, Hyman (1953) and Arieti (1955) have pointed out the tendency of schizophrenics to conceptualize on the basis of "partial" similarities. In agreement with Froeschels (1946) in respect to hypnagogia, von Domarus considers schizophrenic speech to be egocentric. "In egocentric speech", he remarks, "inner and outer speech are not yet separated. The inner speech proceeds by thinking in predicates rather than in subject-predicate sentences; ... The paralogician expresses himself in egocentric speech habits, for his thinking is predicative and he has regressed to the egocentric speech of the child" (von Domarus 1964, p.112).



Piaget (1932, pp.43-47) placed egocentric thinking between autism and intelligence. He explains that, whereas the latter operates rationally, autistic thinking is ontogenetically primitive. Thus, water, for instance, in autistic mentation "has in fact been identified with the liquid substances which issue from the human body, and has come, in this way, to symbolize birth itself, as is proved by so many myths (birth of Aphrodite, etc.), rites (baptism the symbol of a new birth), dreams, and stories told by children". Very important, and in agreement with my own analysis of hypnagogic mentation, Piaget states:

Ego-centric thought and intelligence...represent two different forms of reasoning, and we may even say, without paradox, two different logics... The points of divergence are as follows : a) Ego-centric logic is more intuitive, more 'syncretistic' than deductive, that is, its reasoning is not made explicit. The mind leaps from premise to conclusion at a single bound, without stopping on the way. b) Little value is attached to proving, or even checking propositions. The vision of the whole brings about a state of belief and a feeling of security far more rapidly than if each step in the argument were made explicit. c) Personal schemas of analogy are made use of, likewise memories of earlier reasoning without openly manifesting their influence. d) Visual schemas also play an important part, and can even take the place of proof in supporting the deduction that is made. e) Finally, judgements of value have far more influence on Ego-centric than on communicable thought.

(quoted by Rapaport 1965, p.159)

Von Domarus argues that, because of the very close relationship between the child's speech and the speech of primitive peoples (they share many egocentric elements) one is driven to the conclusion that "the specific paralogical thought and speech processes of the schizophrenic are in essence those of primitive peoples" (p.112). A similar conclusion was reached by Storch (1922) who also discovered in schizophrenic philosophy features of primitive and archaic-magic mentality as found in the creeds and legends of primitive tribes. Likewise Silberer (1965), Schultz (1930), Isakower (1938), and McKellar (1957) have argued for the regressive character of hypnagogia (see earlier chapters).

Schultz (1930, p.56) has also drawn attention to hypnagogic experiences such as "the cosmic identification, the experience that the world is ending", which he believes to "belong to the realm of schizophrenia" and which, together with other experiences, also to be found in hypnagogia such as "the complexity of the thinking process, the shifting or abolition of borders between the Ego and the external world", have been summarized by Storch (1922) as "archaic-magic forms of experience".

Archaic-magic features are also clearly present in both hypnagogia and in schizophrenia in the paralogical process of identifying from single predicates. In primitive cultures as well as in magical practices ancient and modern (see e.g., Frazer 1976; Eliade 1976) identification is affected merely on the basis of single predicates. For instance, the metal gold and the sun may be identified on the grounds of both possessing the property 'yellow' following the same process of identification through a single predicate as in Mintz's and von Domarus' examples. Moreover, more complex identifications may be affected on criss-cross references to other single properties. For instance, in the present example kingship may come to be identified with the sun and thus a king may come to wear gold-coloured or yellow garments and a golden crown (irrespective of the commercial value of gold). Or, the sun may be identified with Life or a life-giving deity for obvious reasons which is then identified with the yellow flowers of certain plants, or liquids or solids.

This may explain to a certain degree the apparently irrelevant and illogical identifications presented in for instance, Froeschels' (1949) second example in which "immediately" means "into three equal parts", Archer's (1935) "Footertootro" which means "feminine inspector" and Green's (1973) "third rail" meaning "complying" and "Uguru" meaning "loneliness". That is, the striking irrelevancy and illogicality of these identifications may be partly due to mediate predicate associations, i.e., to series of subconscious processes of identification based on similarities of predicates. This would mean that in



the case of apparently entirely unrelated identifications, e.g., "Footertootro=Feminine inspector", "immediately=into three equal parts", "third rail=complying" there may be missing associating identifications. It might also imply that there are a number of frames of reference crowding the subject and that the often observed syncretization or condensation is the result of bringing together these sets in a climate of openness and passivity. Not infrequently, schizophrenics engage in complex and apparently invalid explanations clearly traversing many frames of reference and feeling very confident about the validity of their conclusions and identifications. Just as often, hypnagogic subjects report apparently irrelevant thoughts and verbalizations which, as we have seen, are to them at the time meaningful identifications pregnant with a sense of significance. But, unlike the schizophrenic, the hypnagogic subject awakes out of the hypnagogic state and thus becomes generally incapable of understanding the reasons, or tracing the steps to his statements-conclusions. Sometimes, however, by prolonging the hypnagogic state the subject manages to follow the development of his thought and thus account for the 'missing links' as can be seen from, for instance, Slight's (1924) example quoted in chapter 11.

The crowding of a number of frames of reference, or rather the switching into a wider frame of reference (FOR) which is characterized by the inclusion and syncretization of two or more FsOR, is evidenced in hypnagogia by the reference made by many subjects to the variety, speed, irrelevancy of associations and feeling of understanding of these irrelevancies at the time of their occurrence. McKellar (1979b, pp.100-101), relating the experiences of the hypnagogic subject to those of a dissociated or split-personality, agrees with James (1890) and Hart (1939) who spoke of dissociation as "less an affair of 'splitting', and more a matter of 'gearing'". However, this change of gear, as can be deduced from the evidence and arguments presented, and depending on the stage of hypnagogia, may not be as clear-cut as the notion of gearing might suggest.

That is, as already mentioned, the hypnagogic FOR appears to be characterized by a syncretization of two or more FsOR. In such a case dissociation from, let us say, the external environment may not be complete in most occasions but instead incorporate the latter, often having transformed it to fit the new, wider FOR. We have already seen that subjects can be absorbed in their hypnagogic experiences while being vaguely aware of their external environment. But in most cases of the latter's reaching the subject's awareness the input is transformed as it becomes incorporated. Thus, although we may talk of dissociation, the dissociated aspects of the hypnagogist's consciousness, such as his somatic or perceptual awareness constituting individual FsOR, may still impinge on, or crowd, his consciousness having undergone certain transformations.

In both hypnagogia and in schizophrenia one of the most important features is that of psychological withdrawal from one's external and/or social environment, which is another way of saying that a person dissociates himself from these environments. As withdrawal sets in, so to speak, more and more normally associated functions, concepts, memories, logical activities (i.e., syllogistic deductions, inductions, etc.), ego controls, ego schemata, etc., become dissociated. Thus dissociation is a multifacet affair encompassing physiological and psychological disturbances.

In hypnagogia, Trömner (1911) has drawn attention to the occurrence of oculomotor dissociation, that is, the occurrence of horizontal, vertical, and diagonal double-vision (p.347). In the same group of physiological dissociations I would also place myoclonic spasms. Although by themselves these phenomena are not to be argued to be schizophrenic features, they may, however, share a common psychological initiating factor with cata-tonic behaviour, namely, psychophysical withdrawal.

Another form of dissociation in hypnagogia may exist between the awareness of a sensation and a hypnagogic auditory experience. For instance, Trömner (p.349)



offers an example (No. 7) in which while falling asleep and being observant of "tiredness of the limbs, a trickling sensation running through the limbs" he becomes aware of the hypnagogic utterance "if the woman from Störort did not exist", an interjection which, as he notes, was completely irrelevant to his current sensations and train of thought. This, along with autosymbolic hypnagogic phenomena may throw some light on the early stages of 'splitting' and the development of delusion and paralogical thinking in schizophrenia in that unrelated phenomena may come to be related systematically in an already initiated state of mental dissociation.

The hypnagogic FOR might be thought of as the outcome or accompaniment of the LEB. Within this FOR and again as a result of the LEB, we have seen that a condensation of many images, ideas, functions, belonging to different FsOR may take place. Condensation of two or more words may result in neologisms. Condensation of two or more ideas gives rise to complex, if faulty, systems of conceptualization where an idea is made to stand for more than it is normally meant to, e.g., it acquires, in addition to its normal meaning (or, unrelated to it), a symbolic one, as can be seen from examples in the chapters on 'Meditation' and 'Psi'. Different ideas may combine (condense) into one again resulting in neologisms or a paralogically widened classification. Neologisms, as argued earlier, may also be the outcome of the crossing or condensation of two or more FsOR.

Paralogically widened classifications which are most frequently encountered in schizophrenic thinking have been referred to by different investigators as e.g. overinclusiveness (Cameron 1938, 1939a, 1947), inappropriate broadening of concepts (Chapman and Taylor 1957), openness (McGaughran 1954; McGaughran and Moran 1956) all of which agree on the tendency of the patient to include in a given category a greater variety of objects than it is thought permissible. These views are not very different from those of von Domarus (1964), Hyman (1953), and Arieti (1955) although von Domarus and Arieti see this thought

abnormality more as a defect in logical-syllogistic thinking than as a widening of categories. Peters (1952) has also suggested that maladjusted persons tend to think in terms of supraordinates, or higher level abstractions - a phenomenon, by the way, which is also found in the thinking of mystics who are not necessarily 'maladjusted' but who certainly view the world in a FOR generally difficult to comprehend.

It is noteworthy that some writers have proposed that in normal individuals there is a basic tendency towards harmonious self-consistency (Lecky 1945), and the avoiding or getting rid of incongruence (Rogers 1951), dissonance (Festinger 1957), and disparity (Peak 1955), or, as Kelly (1955) has argued, the building of personal constructs in such a manner as to minimize incompatibilities. The last author specifically proposes that the loosening of one's personal constructs is conducive to the lessening of anxiety. The same is believed by Hyman (1953) and Arieti (1955) to be affected by a blurring or imprecision in conceptualization. McReynolds (1956, 1958) also proposes, in agreement with the above writers, that the feeling of anxiety "arises when assimilation of percepts is difficult or impossible" (McReynolds 1960, p.255) and that "a decrease in the strictness of the standards used in categorizing percepts would....facilitate the assimilation of otherwise unassimilable percepts" (p.280) thus reducing anxiety. Having proposed that "the primary 'cause' of schizophrenia is an extremely high quantity of unassimilated percepts" (p.261) he sees the reduction in the strictness of conceptualizing as a way of avoiding incongruencies and anxiety arising thereof. This is in agreement with observations and theories presented by other investigators who argue that schizophrenic symptoms first appear at the peak of a crisis in the life of an individual and that they are the result of such a crisis.

If such theories are correct then the paralogically widening classification as a schizophrenic symptom which reduces the patient's anxiety can be found in full swing in hypnagogia in addition to its presence as a



'disturbance' of thought argued earlier: It is present in hypnagogia as a reducer of anxiety too. Indeed, reduction of anxiety, or relaxation, is, as already argued, a constituent of the hypnagogic syndrome. We know that hypnagogic experiences take place against a background of increasing relaxation and receptivity and that the slightest tension or anxiety is apt to bring hypnagogia to an end. One effect that the hypnagogic deepening of relaxation has on the subject's mentation is the transformation and incorporation of stimuli from his external physical, social, and psychological environment which reduce and eliminate his need to attend to them actively that would have given rise to anxiety, as can be seen from sleep deprivation experiments. Moreover, transformation and incorporation of environmental stimuli, as we have seen, takes place paralogically. Thus, the presence of the phenomenon of the paralogically widening classification in hypnagogia and in schizophrenia is doubly confirmed: first, as a thought 'disturbance', and second, as a reducer of anxiety.

Relevant to the present discussion is Payne's (1962) suggestion that the phenomenon of over-inclusiveness is the result of a breakdown in a hypothetical filter mechanism which normally screens out those stimuli, both internal and external, which are irrelevant to a task in hand, to allow the most efficient processing of incoming information. Such breakdown, according to West's (1962) theory of hallucinations and dreams may arise from either an extreme decrease or increase of stimuli. Whereas the former is the case with hypnagogia, the latter may be true of schizophrenia. That is, in schizophrenia we may have a "jamming of the circuits" as the result of a crisis characterized by extreme anxiety brought on by either a gradual or a sudden extreme increase in unassimilated stimuli. It is interesting to note that many mystics, too, are reported to have had their mystical experiences at the peak of similar crises, an observation suggestive of not so much a breakdown as a switch to a different FOR, an important difference between the schizophrenic and the

mystic perhaps lying in the general constitution and ability of the latter to cope with the flooding of 'irrelevant' information.

### Epilepsy and schizophrenia:

In discussing schizophrenia it is hardly possible to ignore its relationship to epilepsy. As Mayer-Gross et al (1969, p.320) point out "some disturbances of thinking and speech in epileptic twilight states can only be distinguished from the corresponding schizophrenic symptoms if one can establish the clouding of consciousness" which occurs in epilepsy. The same writers further note that certain schizophrenic psychoses can bring about epileptic fits accompanied by ictal frequencies and that such fits are commonly observed in chronic deteriorating schizophrenia (pp.453-4). Moreover, although symptoms in ideopathic schizophrenia are thought, generally to appear against a background of clear consciousness, this is not always the case, and, arguably, not necessarily true in general.

First, there are those cases included in what Meduna and McCulloch (1945) have called "oneirophrenia" characterized by clouding of consciousness and which have been quoted in support of a theory ranging schizophrenia with symptomatic psychoses (Bumke 1924). Second, there is the generally accepted evidence that "the facility of the schizophrenic in separating the realm of reality and imagination is notoriously impaired" (Angyal 1964, p.119). In addition, there are those cases of paranoid psychosis in "clear consciousness" (see e.g., Sedman 1966, p.3) occurring in some epileptics to account for which Landolt (1958, 1960) has enunciated the principle of "forced normalization". In these instances it has been observed that during epileptic twilight states the ictal frequencies disappear from the EEG of the patients and are replaced by normal dysrhythmia. This phenomenon has been described as "an adaptive effort gone too far" by the rest of the brain to 'normalize' the presumably undesirable synchronization



of brain electrical activity. On the other hand, ictal phenomena are considered as being essentially homeostatic (Hill 1948: cited by Mayer-Gross et al 1969), linked to the operation of diencephalic regulating centres concerned with homeostasis (Roth 1951). "Forced normalization" has been found by Landolt (1960) to occur also in schizophrenic psychoses and Mayer-Gross et al (1969, p.474) suggest that the nuclear schizophrenias may also be organic processes affecting the same functional systems of the brain as those involved in epileptic schizophrenia. (For the relationship of epilepsy to hypnagogia see section on "Epilepsy" in chapter 14).

#### Hypnagogic experiences and pathogenesis:

Baillarger (1846), one of the first workers in this area, noted that at sleep onset normal individuals become subject to confused perceptions and before total sleep overtakes them they go through a "passing delirium" (p.477). He quotes Marc (1840) who refers to the seeing of grotesque figures and the hearing of human and animal voices and other sounds in this state as "internal and external errors of the senses" and who refers to hypnagogia as a state of dreaming without sleeping.

Baillarger himself argued (and he presented some evidence to this effect) that hypnagogic hallucinations are found extensively both in individuals predisposed to insanity and in insane patients, especially at the beginning of their illness.

The first group, viz., those predisposed to insanity, comprised mental patients whose record showed that for years prior to the onset of the illness they had frequent (mostly unpleasant) hypnagogic experiences encompassing the whole sensory spectrum. Most of these individuals were genetically predisposed to mental illness. Their hallucinations occurred initially only at sleep onset or on awakening but eventually extended to the waking state. A typical case illustrating the course of this development is the case of a woman (case No.9) whose most frequent

hypnagogic hallucination was the seeing and hearing of soldiers beating their drums. At the beginning this experience only frightened her but gradually she came to see some intention in it: it was clearly sent to annoy and disturb her. Later, the sight of soldiers in the streets or the sound of drums during the day upset her greatly. Eventually she became paranoid. It is pointed out by Baillarger that at the beginning of the course of their hypnagogic experiences these people have a clear insight of the situation - i.e., they know that these experiences are imaginal - which, however, they eventually lose.

In respect to the second group, which comprises the current experiences of mental patients, Baillarger argues that firstly, the hallucinations of many of these individuals are restricted to those occurring at sleep onset and, secondly, in many cases of wakeful hallucinations these are noticeably pronounced at sleep onset. Indeed, the mere lying down or/and closing the eyes tends to exaggerate these hallucinations. He cites cases where the course of the illness begins with hypnagogic hallucinations which, as the illness worsens, turn into wakeful hallucinations, then back into merely hypnagogic ones as the patient begins to recover, eventually disappearing with full recovery. Thus, naturally, Baillarger considers hypnagogic hallucinations to be important diagnostic factors as he believes they form part of the predisposition to insanity.

Nearly a hundred years later Schultz (1930) argued that hypnagogic experiences share the same psychological, and probably physiological, mechanisms with dreams and schizophrenia. This view is also shared by Vogel et al (1972, p.449), who, having drawn parallels between dreaming and schizophrenia, noted "shared regressivity" components between REM sleep and hypnagogia and suggested that sleep onset may provide the physiological correlates required to test the hypothesis that dreaming and schizophrenic mentation share the same physiological correlates.

Schultz (1930) appears to suggest that we are all latent schizophrenics (p.58) and that for many people the



experiences of hypnagogia are indistinguishable from those of schizophrenia. Further, Schultz, like Baillarger, argued that for great many schizophrenics the only kind of hallucination they experience is the hypnagogic type which, nonetheless, is indistinguishable from so-called 'proper' hallucinations in terms of intensity and realness. Moreover, Schultz argues that, as in the case of hypnagogia, schizophrenic hallucinations 'proper' are rare by comparison to the quasi-hallucinations which are numerous.

More recently, McKellar and Simpson (1954) have remarked that "a psychotic might readily interpret a hypnagogic image in terms of his delusions" and that hypnagogic imagery might "enrich the content of a pre-existing psychosis" (p.271). Having noted that not all hypnagogic images are experienced with closed eyes (see e.g., Alexander 1909; Rawcliffe 1952), they point out that in some cases drowsiness is not present either (see also Collard 1953; Myers 1957). One of their subjects reported:

It was dark outside, but I 'saw' out of the window - bright sky, coloured trees. I could see people sitting on the roof - what they were wearing and the features of their faces. I woke my sister who was sleeping beside me and said 'Look Ella!' and began to count the people.

(McKellar and Simpson 1954, p.270)

Thus, McKellar and Simpson, along with Alexander, Rawcliffe, Collard, and Myers, appear to argue that normal subjects may have hypnagogic experiences with open eyes and in 'clear consciousness' - the latter generally thought of as a feature accompanying psychotic hallucinations in ideopathic schizophrenia. However, the data argue that neither schizophrenics nor hypnagogic subjects have hallucinations truly in 'clear consciousness'. The presence of the latter in the case of schizophrenics is mostly ascertained by the patient's ability to respond concurrently to his external 'objective' environment, which is the same as saying that the patient is not asleep. This is not entirely different from being in a state of hypnagogia during which, as McKellar and Simpson (1954, p.270) note, the subjects are still able to have ordinary perceptions, are able to have separate thoughts, are able to engage in

conversation, as can be seen from their example above. Nonetheless, in both schizophrenia and hypnagogia imaginal activities take precedence over the objective environment and in later stages of both the abstraction-absorption reaches such a degree as to render the subject or patient non consciously responsive to his environment. It is in such context that comments like "the lunatic is a wakeful dreamer" (Kant: cited by Radestock, 1879, p.10) can really make sense.

A similar argument to that put forward by Baillarger suggesting that persisting hypnagogic experiences may be prodromal to schizophrenia was advanced by de Manacéine (1897) who stated that prolonged and persistent hypnopompic experiences lead to mental illness. However, although in what has been examined so far hypnagogic-hypnopompic and schizophrenic experiences may at times be indistinguishable phenomenologically there is no statistical evidence to show that their frequent occurrence indeed predisposes the normal individual to mental illness.

#### Summary:

In this chapter I looked at schizophrenic disturbances in the light of hypnagogic phenomenology and argued that the former are present, to a considerable extent, in the latter. I, further, proposed that the core phenomenon of loosening of ego boundaries (LEB) which constitutes the essential character of hypnagogia may also be implicated in the production of many schizophrenic disturbances. In doing this, I drew attention to the specific logic emerging from the LEB which is characterized by a general loosening of boundaries (of egos, objects, concepts, etc.) leading to a widening of classifications, overlapping and fusion or crossing of frames of reference and an attitude of merging and 'confusing' the inside with the outside, the objective with the subjective.

Finally, I discussed certain connections between epilepsy and schizophrenia, and argued that the strong phenomenological similarities between schizophrenia and



hypnagogia do not constitute sufficient grounds to support the proposition that hypnagogic experiences are pathogenic in nature.