

PROLONGED SLEEP TREATMENT IN MENTAL DISORDERS (SOME NEW PSYCHOPHARMACOLOGICAL CONSIDERATIONS)

By

H. AZIMA, M.D.

Montreal*

SLEEP as a method of controlling mental derangements dates to antiquity. According to Celsus sleep restores mental equilibrium: "but certainly for all so affected sleep is both difficult and especially necessary; for under it many get well . . ." (13). Griesinger in 1861 was the first to use chloroform as a sleep-inducing agent in mania and melancholia (21). The advent of bromides and barbiturates enhanced further investigation, and early in this century sleep treatment was relatively well systematized by Wolf in 1901 (40), Trenel in 1903 (39), and by Kläsi in 1922 (25). This paper will not attempt to review the literature on sleep, for these findings have been outlined in papers by Palmer (32, 33), Baer (7), Ey (18), and recently in a documented book by Angel (2). The purpose of this paper is to present (1) a method of prolonged sleep treatment using the new inhibitory substance chlorpromazine (Largactil), in combination with different barbiturates in an attempt to provoke a sleep pattern as similar as possible to normal sleep, in contrast to deep unconsciousness advocated previously (14, 32); (2) to discuss underlying theories of sleep treatment, and propose some new formulations; (3) to suggest future use and investigation of the treatment; and (4) to bring to the attention of American psychiatrists a treatment which holds an eminent position in Europe, particularly in the U.S.S.R. where sleep therapy appears to be the only officially accepted form of treatment in mental illnesses.

MATERIAL AND METHOD

This paper is based upon a study of 25 cases, followed for 12 months or more. Five of these have had a 24-month follow-up. These 25 cases had not responded to any other form of treatment, ranging from electric shock to long-term psychotherapy, and in each case the sleep treatment was used as the last resort. Classified diagnostically there were: 8 schizophrenics, 2 manic depressives, 3 obsessive compulsives, 9 mixed psychoneuroses, 2 hysteria and 1 character neurosis.

The age range was from 19 to 44, with an average age of 30. Prior to treatment all cases received a routine physical examination, and EEG, and a psychological investigation.† The EEG was repeated four days following the termination of treatment. Four months following treatment, four cases were retested with a psychological battery including: the abbreviated Wechsler Bellevue scale, Figure Drawings, and Rorschach. Since chlorpromazine (Largactil), the medication added to the routine barbiturates, was known to have an hepatotoxic effect, three liver function tests were carried out, including cholesterol and serum bilirubin studied once weekly, and alkaline phosphatase studied twice weekly. (Experience with this drug in the past (5, 38) proved that these

* McGill University and the Allan Memorial Institute of Psychiatry.

† We are indebted to the staff of the Psychology Department of the Allan Memorial Institute, particularly Miss Fern Cramer and Mrs. Rhoda Knaff, for the psychological studies.

weekly liver function tests were sufficient warning agents of possible commencing liver damage.)

The actual sleep method used has been the result of modification of the treatment used in Europe, primarily in Ey's clinic where the author assisted in its administration. The goals were to produce by medication a prolonged sleeping state, approximating as closely as possible the normal physiological state; that the patient was to sleep twenty to twenty-two hours daily; and that he could be treated easily and swiftly by well trained psychiatric nurses. These goals were at least partially realized by the following procedures: (1) combining three different time-reacting barbiturates which would produce a sustained level of sleep, i.e. as one barbiturate was declining another was reaching its maximum effect. Seconal was chosen as a short acting barbiturate, Nembutal as one of moderate reaction time, and barbital or phenobarbital as long acting medications. (2) chlorpromazine (Largactil) was added to the above combination because it seemed it would be a useful contributor to the sleep treatment in view of its regulatory effects on different mental syndromes (5, 27), as well as its barbiturate-potentiating effects. The addition of this drug permitted a reduction in the amount of barbiturates that had to be administered, produced a smoother sleep course, and provided a medication that could be maintained after the sudden cessation of the other barbiturates. In all cases all the medication with the exception of the Largactil was stopped at the end of the sleep treatment. This sudden cessation of medication was based partly upon Heldt's report (22) that the post-delirium state sometimes following prolonged barbiturate narcosis was the main therapeutic aspect of the sleep treatment.

Two nursing methods were used according to the degree of the patient's tolerance, the degree of adaptation, and the smoothness of the sleep: (1) A triple-waking technique: the patient was awakened three times a day, at 8 a.m., 2 p.m., and 8 p.m.; and (2) A double-waking technique: the patient was awakened twice daily, at 8 a.m. and 8 p.m. Experience showed that the first technique was safer, and a less stressful form of treatment. An attempt was made to limit the maximum total nursing care of each period to one hour. During this hour temperature, pulse, blood pressure, and respiration were taken before the patient was moved out of bed to get cleaned, etc. and then he was encouraged to eat anything he liked, sitting on a chair. Solid food would usually be taken in the first week, and from then on semi-solid foods. The minimum amount of calorie intake was 1,500, and the minimum amount of fluid intake was 2,000 c.cm. daily; the latter was modified according to the output. In addition, all patients received extra vitamin B and C parenterally. The nursing care between waking periods consisted of changing the position of the patient every two hours and administration of a mixture of oxygen-carbon dioxide if the respiration became shallow (this was necessary in only two instances). To facilitate the excretory functions patients received milk of magnesia routinely every other day, and were given a colonic irrigation if no elimination had occurred in two days. Catheterization was performed within ten hours if the patient had not urinated spontaneously. Five units of regular insulin were given half an hour prior to each meal in order to increase the appetite.

The basic medical formula was the following:

Seconal	gr. 1½	or	mgm. 100
Nembutal	gr. 1½	or	mgm. 100
Barbital	gr. 2½	or	mgm. 150
Phenobarbital	gr. 3	or	mgm. 200
Chlorpromazine			mgm. 50

This formula can be adjusted quite easily in the first few days according to the degree of wakefulness. In order to have a more or less standard measurement, the degree of wakefulness was divided into four grades, in relation to stimuli which were utilized systematically in the following order: light (opening of the door, flashing light on the patient); sound (non-verbal, verbal); touch, movement (part, and whole body); and pain. According to the responses to these stimuli the following qualitative four grades were adopted:

- 4—Patient wakes up, opens his eyes, talks freely, moves in and out of bed relatively unaccompanied, and eats alone.
- 3—Patient wakes up, opens his eyes, talks with difficulty, moves in and out of bed slowly, and has to be fed and be accompanied.
- 2—Patient wakes up, opens his eyes, talks with difficulty, can move in bed but not out of bed unaccompanied, and has to be fed.
- 1—Patient wakes up, opens his eyes, mumbles, and moves in bed.
- 0—Patient wakes up, does not open his eyes, does not talk, does not move except for a few movements indicating his waking up.

These grades were used by the nurses, and the medication could be adjusted accordingly, even without the physician seeing the patient. Usually doubling the dose of two barbiturates was enough to change the degree of wakefulness about one grade. It was found that in the case of restlessness, particularly at night, one intramuscular injection of hyoscine gr. 1/150 and apomorphine gr. 1/60 was enough to carry the patient over till the next medication. It is important to note that the amount of barbiturates required and the degree of smoothness of the sleep was greatly dependent upon the willingness of the patient to accept the treatment. For this reason, as observed by other authors, all patients were interviewed at length prior to the treatment, the procedure explained, and a motivated consent obtained. In three patients, who in the second week of treatment became restless and resistant to taking medication, it was found that the administration of Seconal gr. 1½ ten minutes prior to the intake of the medication during the meal was sufficient to provoke a sufficient degree of drowsiness and co-operation in order that the other drugs would be taken with little resistance.

RESULTS

The following Table indicates the overall results in the 25 cases, according to their diagnostic classifications. There was improvement in 15 cases (9 markedly improved and 6 moderately improved).

TABLE I

Clinical Diagnosis	Number of Cases	Marked Improvement	Moderate Improvement	No Improvement
Schizophrenia	8	3	2	3
Manic-depressive	2	2	—	—
Obsessive-compulsive	3	—	—	3
Mixed Psychoneuroses	9	3	2	4
Hysteria	2	1	1	—
Character Neurosis	1	—	1	—
Total	25	9	6	10

Schizophrenias

Eight chronic remitting schizophrenics, refractory to all other treatments, received an average of twenty-five days of sleep. Three cases showed marked, and two moderate improvement. The improvement consisted of the capacity

to organize their social life and appear "normal" to their close relatives. However, it should be noted that in two cases, who showed marked improvement, the Rorschachs performed four months after treatment revealed no particular change in the schizophrenic structure of personality as compared to the pre-sleep Rorschachs, except for the strengthening of some defences.

These results with schizophrenics are in contrast to those of French authors who found few improvements in this particular mental syndrome. However, Ivanov-Smolenski (quoted by Wortis) finds the results comparable to those treated with insulin coma; and, in fact, the cases with preponderance of affective features responded better to sleep, while cases with florid symptomatology were benefited more by insulin.

Manic-Depressives

At the beginning of our experience with sleep we used prolonged sleep in one case of florid maniacal symptomatology, and another mixed case of agitated-depression. Both cases showed marked "clinical cure". But since then Largactil alone (5, 27) has proved sufficient to control the maniacal states, and there has been no need to use prolonged sleep in this affection. However, we were impressed by the repetition of a triple cycle of mood change in the two cases mentioned. While in sleep, the maniacal state changed, in the first week, into a depressive mood, which then, in the second week, changed into a second maniacal episode, and finally the mood returned to "normal" at the termination of treatment. One may try to explain this change by the concept of regression, and the fact that the depressive state may be a deeper state of regression provoked by organic assault combined with evident psychological dependency state initiated by sleep. Later when the unknown reorganizing effects of sleep set in, a progression to the maniacal defence state occurs, followed by a more or less complete reorganization and normalization.

Obsessive-Compulsives

Three cases with longstanding obsessive-compulsive complaints, and marked rituals showed only slight improvement after an average of twenty-five days of sleep. In one case the washing rituals decreased from three hours to one. Like most other treatments in this neurosis, this therapy proved to be of little benefit.

Other Neuroses

Nine cases of chronic mixed psychoneuroses with a variety of complaints (anxiety, hypochondriasis, hysterical reactions, obsessive-compulsive trends, etc.) received an average of twenty-five days of sleep. Three patients showed marked improvement and two moderate improvement. The improvement consisted of the ability to reorganize their social life, the disappearance of symptoms, and the return of their behaviour to "normal", as judged by the relatives. Three of the improved cases developed strong feelings and behaviour of dependency. Two of these patients gradually overcame this dependency following routine supportive psychotherapy, and the other worked through this dependency in a non-directive form of psychotherapy.

Two cases suffering from typical hysterical symptomatology underwent thirty days of sleep. One, with dull intelligence, moderately improved and was able to resume her social life. The other showed a complete recovery not only in her symptoms, behaviour and social life, but also in her personality structure, assessed clinically and by the Rorschach. This test taken four months

after the treatment and compared with her pre-sleep Rorschach showed marked improvement and stabilization, a release of creative energy, the establishment of better intellectual control, a better control of emotional responsiveness, and a considerable strengthening of the defences. Our results with neurosis confirm those of other writers.

A moderate improvement was noted in a typical case of so-called character neurosis who had not responded to prolonged psychotherapy. This improvement was transitory however, and the patient relapsed, but with lesser intensity, about eight months after treatment.

Complications and Changes

There were some minor complications such as sudden rise of temperature to 103–104° and then a sudden fall to normal within 12 hours in 3 cases; maculo-papular rash in 2 cases, which disappeared completely after the cessation of treatment. Other more important complications were as follows: post-sleep convulsive seizures in 2 cases, one being an epileptic with mixed psychoneuroses; a mild peripheral radial paralysis of the left hand in one case, which disappeared within a month; a Parkinson-like syndrome in two cases, probably due to the effects of Largactil; and one case of bronchopneumonia in the 17th day of sleep which recovered promptly under antibiotics. This case was among our early cases.

Two cases showed slight liver damage manifested in rise of alkaline phosphatase, which declined rapidly after the cessation of Largactil. There was no evidence of brain damage.

The EEG's of 7 patients were examined before and a few days after prolonged sleep therapy. Changes following treatment were quite consistent. Alpha activity, if present, was at a slower frequency than before treatment. Frequently the predominant rhythmic activity was in the theta range at 6–7 c./sec. All records contained considerably more bilateral theta activity than observed prior to treatment. The general effect was one of slowing of brain rhythms.

Photic stimulation was carried out as part of the EEG examination. No patients displayed a photomyoclonic response prior to treatment. After treatment 4 of the 7 gave a photomyoclonic response" (35). This finding would be anticipated from Shagass's (36) observation that the photomyoclonic response is elicited frequently shortly after apparent clinical recovery from barbiturate coma.

All in all, the complications were minimal, and even in one case who was suffering from urinary infection before treatment, the sleep could be started and terminated successfully by the use of an indwelling catheter. This relative lack of complications is in contrast to the experience of some other investigators using other methods (14, 33).

Theories of Prolonged Sleep Treatment

Three types of theories will be discussed as underlying the type of sleep action and its effects on the organism. First we will discuss the various physiological theories, then the diverse psychological concepts, and lastly the organo-dynamic theory which attempts to combine the former two approaches.

Muller (31) considered the mode of action of sleep thought as a chemical rearrangement of the vegetative nervous system, an opinion later shared by Monnier (30). Hess suggested that sleep has a particular function in preventing the psyche from exhaustion (23). Boss (9) expressed a similar view. He believed

that sleep restores energies which maintain the ego in consciousness. Palmer (32) in a similar approach stated that sleep results in a type of psychosomatic rest allowing both somatic and psychological restitution. The problem of central nervous system "rest" is not a new proposition; as we said at the beginning Celsus believed in the restitutive function of the sleep. It seems that the point of view held by Russian authors, which is admittedly a totally physiological hypothesis, has the same basis (10, 41). The Pavlovian conceptions of the roles of the cortex are those of inhibition, excitation, and control. In some instances the cortex is incapable of controlling and inhibiting the impact of stimuli from the diencephalon to the degree that all the arriving signals become exaggerated and cortical responses, even to weak stimuli, become violently progressive. This results in the formation of subcortical chain reactions which alter visceral and central nervous system functioning. The purpose of sleep treatment in this concept is to allow a temporary disconnection of the exhausted cortex, which allows the restitution and reorganization of cortico-subcortical connections. This is explicit in Pavlov's concept of "protective inhibition" provoked by sleep: "a state of depressed or suspended nervous activity which has important restorative and regulative effects on nervous functions" (41). It should be noted that the concepts of inhibition and excitation are totally hypothetical.

The recent opinion of some French authors (16) concerning the effect of Largactil on mental syndromes is similar to the above. Largactil, by its sympatholytic and inhibitory effect, provokes a modified form of hibernation without refrigeration. This hibernation, in some instances when the fundamental pathology is a hyperactivity of the adaptative processes, puts the organism at rest and results in restoration of functions and improvement.

As far as the psychological theories of sleep go, it is beyond the scope of this paper to discuss this problem fully. What appears relevant to the matter under discussion is the fact that, psychodynamically speaking, in recent years a gradual shift has occurred from the original emphasis Freud put upon the release and satisfaction of drives in sleep to its defensive character. Furrer (20) stressed the possibility of a better ego-organization during sleep after the release of excessive libidinal drives from associative constellations. Simmel (37) noted the function of sleep as a defence against aggression to the therapist. Bird recently has stressed similar views. For him sleep can serve as a defence against aggression "not by shutting out aggressive fantasies but particularly by inhibiting motility" (8). Scott (34) considering the same problem spoke of sleep as a "regressive defence".

It may be that the beneficial effects of sleep therapy are due solely to its psychological significance, and the manner in which the patient consciously and unconsciously utilizes it emotionally. Sleep puts the patient in a complete state of dependency, where all apparent needs are fulfilled. This dependency itself, as was pointed out by Heldt (22), may be the important therapeutic element. Dependency may become the turning point of a pathological sequence of events. In fact, in our improved cases one schizophrenic and three neurotics developed marked dependency on the therapist which was the starting point which allowed further constructive treatment. However, there were no particular personality trends or conflictual settings common to all these patients. Some improved cases did not show dependency. However it should be emphasized that in those who developed dependency, this behaviour could be therapeutically utilized. The important point in our improved cases was that, clinically as well as in psychological tests, there was a change in the defence system, allowing better ability to control and integrate conflicts. In other words, a strengthening of the

ego had occurred. In almost all neurotic patients who improved, the important psychological factors prior to sleep were the weakness of defences and the imminence of the release of most of the drives and action tendencies. However, many of the unimproved cases also had similar psychodynamics.

Although evidence indicates the importance of psychologic factors in the aetiology of sleep, in its maintenance, and its cessation, it does not seem to the writer that they can be applied *in toto* and directly to pharmacologically provoked prolonged sleep. In this instance sleep is enforced and it is not the outcome of the conflicting tendencies originating within the organism, although it has considerable effect upon them, and it is subsequently psychologically assimilated and invested by the organism. The explanatory theory should be, in the present situation, psychophysiologicaly relevant. In sleep disturbances—and most of our patients showed these disturbances—the problem resides within the different psychic instances in full function, while here the sleep is provoked *beyond* and *in spite* of internal conflicts. It appears to the writer that the conceptual framework of sleep should be organo-dynamically* oriented. The same is true for normal daily sleep in which both organic and psychologic factors play a role. In pharmacologically prolonged sleep, however, the organic factors are in the foreground and are the first events in the sequence of “physiological process—total organism—psychological process” (3). In psychologically induced sleep (during psychotherapy, in hypnosis, etc.) the sequence is in reverse, i.e. “psychological process—total organism—physiological process”. What follows is a series of inferences and concepts along this line which may render comprehensible some, and only some aspects of prolonged sleep treatment.

The role of the central reticular activating system in the states of wakefulness, arousal, and sleep has been recently emphasized (19, 28) and it appears that they should, logically, form the first series of organic events in the theory of prolonged sleep. It appears that the activity of this system is responsible for what can be called “attentive prehension” of the internal and external events (6). Put otherwise, it can be said that through the diffuse influence of this system the organism is put in a state of effective or active “presence in the world” (6). Kubie (26), and Azima, Cramer and Faure (6) have postulated that some functional neuronal systems are concomitant and underlie some unconscious processes, and may be represented, theoretically, as composed of some self-sustaining, self-repetitive, self-energizing neuronal sets beyond the active phase of other neuronal patterns. It appears logically consistent to maintain that the establishment of a relationship between these self-sustaining systems and the non-specific reticular system puts the organism in a state of attentive and effective prehension of the events represented subliminally before, and provokes what can be designated as emergence of unconscious processes into consciousness. If this hypothesis is plausible some psychotherapeutic events such as more or less sudden insight, abreaction, breakdown of defences, release of drives can become psychophysiologicaly somewhat comprehensible. It is known that barbiturates inhibit and deactivate the reticular system, and recently the same phenomena have been illustrated with the use of chlorpromazine (24). Thus during the sleep treatment the systems responsible for the support of some conscious processes remain for a long time in a state of low energy, inactivity, or relative refractoriness. It is consistent to continue the inference and say that

* The term “organo-dynamism” was first used by H. Ey for his general conception of Psychiatry and Neurology (4, 17). The writer takes as theoretically meaningful only the first premise of this conception, from which the above inferences are derived.

in this state those self-sustaining and self-energizing systems of unconscious activity can form functional relationships much more easily with the reticular system, because the latter system is deactivated and does not hinder the propagation into it. Hence much of the self-energizing action tendencies can be released and come into relationship; in other words, become integrated with other functional neuronal sets. In our experience marked abreactive phenomena in relation to unconscious life relationship of the patients would emerge in verbal and behavioural form within a week in almost all cases. It was said at the beginning that pharmacologically produced sleep is forced upon the organism beyond and in spite of psychodynamic structure of the personality. If we consider what we said about the relationship of the reticular system to conscious and unconscious systems, and if, in addition, we consider that voluntary effort is necessary for normal sleep, and that the ego interferes in inducing and maintaining the sleep, it follows that in pharmacologically prolonged sleep we are dispensing with the services of the ego and voluntary effort and we are not allowing the organism to utilize the available energy and action tendencies of this aspect of the psyche. We are producing a state of sleep where the ego is more or less not involved, its defences are not used, its substantial structure is inhibited and put at rest for awhile. This relative inactivation of the integrating systems allows and helps explain the emergence and release of repressed action tendencies and drives, with subsequent gratification, exhaustion and reintegration, while the ego system has not lost any of its energetic tendencies. Following sleep, the ego may even appear strengthened, since some underlying conflicts have been abreacted and no longer necessitate the maintenance of some non-contributing defence mechanisms. For example, during sleep the dependency and passive needs are allowed to be released and gratified. In awakening, the passivity may be accepted as such, non-conflictually, and can be psychotherapeutically utilized without a defensive super-structure. This was demonstrated in four cases where the pre-sleep behaviour consisted mainly of destructive aggression evolved chiefly as reaction formation against unacceptable passivity.

There remain many other points and objections to be considered. The above formulation may be useful in an organo-dynamic understanding of some aspects of prolonged sleep treatment.

Indications for Sleep Treatment

As yet there is not a general consensus of opinion about the indications of prolonged sleep therapy. It appears, however, that neuroses and psychosomatic syndromes respond more readily to this treatment. Andreef (1), who has treated more than 350 cases, gives the following indications in order of preference: peptic ulcer, hypertension, visceral neuroses, causalgia, phantom-limb, and refractory ulceration of extremities. Davidenkov (15) in his experience with 118 cases supports this general outline, and so does Ey's recent report (18). It should be noted that Russian authors look at the problem of neuroses and psychosomatic syndromes in a purely physiological manner. They believe that sodium amytal induces a physiological release of psychomotor functions which is very effective in a state such as stupor. They disclaim any complex intrapsychic mechanisms (Wortis). In schizophrenias the reports are equivocal. Ey's results have been very poor, while Clapp and Loomis (14) report a favourable impression with their continuous method of sleep therapy. According to Ivanov-Smolenski (cited by Wortis) prolonged sleep treatment gives similar results to insulin in the treatment of schizophrenias. Our experience, on clinical grounds

only, supports this opinion. It is generally agreed that sleep alleviates, at least temporarily, the maniacal or agitated depressive states.

Our experience is too limited to permit a definitive outline, but our tentative list of indications is as follows: neuroses, in particular conversion hysteria, anxiety hysteria, and borderline cases with predominance of hysterical and anxiety symptoms; hypochondriacal and psychosomatic syndromes; schizophrenic reactions with preponderance of affective alterations and excitation. Obsessive-compulsives appear to benefit very little by sleep, while manic-depressive states can be treated with success with Largactil alone.

COMMENTS

The present form of prolonged sleep treatment, as presented in this paper, has some advantages over some of the previous methods. Chlorpromazine (Largactil) permits a considerable reduction of barbiturates, in addition to its inhibitory effects, and the combination of three time-reacting barbiturates allows a more sustained and near-physiological level of sleep, which in turn reduces the nursing care. It is very probable that by providing a particular section for sleep therapy in the hospital, by providing a uniform setting, and by utilizing some additional procedures, as used by Russian authors, one may induce a pattern of conditioning whereby sleep is provoked with very small amounts of barbiturates.

The question arises as to the value of sleep therapy, for as will be noted the rate of recovery (60 per cent.) is no higher than other forms of treatment. It should be noted, however, that this rate of recovery occurred in intractable patients who had not responded to any other form of treatment. The important point seems to be how to select those cases which will respond to sleep therapy and not to others, and are likely to profit more from this specific type of therapy. It seems necessary to study carefully the personality changes during and following the sleep that will provide criteria for the selection of cases for such a treatment.

Prolonged sleep appears to offer many possibilities both as a primary or adjuvant therapeutic tool. Two future applications which may render a promising service for the therapy of mental disorders are: (1) to provide a setting for anaclitic therapy (29); (2) to provide a setting in which "psychic driving" (11, 12) may be instituted. Both of these applications have been utilized. In one case* this anaclitic therapy was applied with much success. The patient was a severe chronic neurotic young woman who had not responded to any kind of therapy. She was put to sleep, fed and medicated by the therapist who provided an intimate setting of mother-child relationship. A marked regression occurred and the patient actually behaved like a baby. This behaviour was psychotherapeutically utilized during the sleep, which resulted in a post-sleep progression and subsequent improvement. An important point in this case was the externalization of forgotten memories during the sleep, with a post-sleep abreaction and living through of these once repressed conflicts. The latter phenomenon illustrates the reversibility of the amnesias reported after prolonged sleep. In another chronic neurotic a very marked regression occurred during prolonged sleep to the extent that there was a complete re-enactment of infantile patterns of behaviour. Here also there was a spontaneous rapid progression post-sleep with subsequent improvement.

* We are indebted to Dr. Shirley Ferguson for the treatment of this case.

Sleep therapy may provide a situation, *par excellence*, for what Cameron (11, 12) has termed "psychic driving" and "dynamic implantation". This method employs the play-back technique originated by Cameron by which certain relevant psychodynamic themes are recorded back to the patient using his, or the doctor's voice. This technique as it were, implants and forces the patient to identify the problem of the repeated verbal stimuli. It also allows the individual to separate his underlying drives from his conscious controlling power; in other words, an "ego-distancing" is allowed between his drives and his ego tendencies (between the primary and secondary processes), and initiates a reintegration and a working through of the problems. Attitude changes were noted in the themes of repeated T.A.T. cards of one patient who following the prolonged sleep psychic driving was able to recognize overtly her formerly disguised hostility to her mother. Further investigation of the combination of prolonged sleep and "dynamic implantation" offers new avenues to therapeutic intervention.

SUMMARY

1. A method of providing a prolonged state of sleep, approximating as much as possible the normal physiological state, is described. This was accomplished by the combination of different time-reacting barbiturates and chlorpromazine (Largactil). The minimum daily sleep time was twenty hours, and the average duration of treatment, twenty-five days.

2. Eight schizophrenics, 2 manic-depressives, 3 obsessive-compulsives, 9 cases of mixed psychoneuroses, 2 hysterics and 1 character neurosis, most of whom had not responded to any other treatment, were treated. They have been followed from 12 to 24 months.

3. Improvement was noted in 60 per cent. of the cases. This improvement was based upon social and behavioural normalization. Four cases had extensive pre- and post-sleep psychological tests.

4. There were very few complications: two transitory maculo-papular rashes; post-sleep convulsive seizures in two cases, one being a recognized epileptic before treatment; one case of pneumonia which responded very rapidly to antibiotics.

5. Indications for prolonged sleep treatment of psychiatric syndromes are discussed and the following tentative list is proposed: neuroses, in particular conversion hysteria, anxiety hysteria, and borderline cases; hypochondriacal and psychosomatic syndromes; schizophrenic reaction with preponderance of affective alterations. Obsessive-compulsives do not respond to sleep, and maniacal cases respond to chlorpromazine alone.

6. Theories of sleep are briefly discussed. A new organo-dynamic formulation is outlined.

ACKNOWLEDGMENTS

The author acknowledges his gratitude to Dr. D. E. Cameron for his guidance and his continuous encouragement; to Miss Fern J. Cramer and Dr. E. Wittkower for their collaboration in the final editing of this communication; and to Drs. M. Prados and H. Aufreiter for their helpful comments and suggestions.

BIBLIOGRAPHY

1. ANDREEF, "Conference concerning Psychosomatic Problems: Director Bikov, Jan., 1948, Leningrad"; Publication of U.S.S.R. Academy of Med. Science, 1949, Moscow. (Quoted by Brisset and Gakel.)
2. ANGEL, J. M., *La thérapeutique par le sommeil*, 1953. Paris: Masson and Cie.
3. ANGYAL, A., *Foundations for a Science of Personality*, 1941. New York: Commonwealth Fund.
4. AZIMA, H., "Fundamentals of a Neo-Jacksonian Conception of Psychiatry and Neurology, H. Ey's 'Organo-Dynamism'", *Arq. Neuro-Psychiat.*, 1953, **11**, 360-370.
5. AZIMA, H., and OGLE, W., "Effects of Largactil in mental syndromes", *Can. Med. Ass. J.*, 1954, **71**, 116-121.
6. AZIMA, H., CRAMER, FERN J., and FAURE, H., "Système reticulé activateur central; son rôle en psychopathologie", *Evol. Psychiat.*, 1955, 121-145.
7. BAER, H., "Die Schlafkur", *Schweiz. Arch. fur Neurol. u. Psychiat.*, 1949, **64**, 17-54.
8. BIRD, B., "Pathological sleep", *Internat. J. Psychoanal.*, 1954, **35**, 20-29.
9. BOSS, M., "Die Psychische Dynamik der Schlafkur bei Schizophrenen", *Schweiz. Arch. f. Neurol. u. Psychiat.*, 1935, **36**, 209-220.
10. BRISSET, C., and GAKEL, V., "La médecine psychosomatique en U.S.S.R. 1: la cure de sommeil", *Press Méd.*, 1951, **59**, 465-466.

11. CAMERON, D. E., "Psychic Driving", *Am. J. Psychiat.* (in press).
12. *Idem*, Personal communications.
13. CELSUS *De Medicina*. Trans. by W. G. Spencer, Loeb Classical Library. 1935-38. London: Wm. Heinemann.
14. CLAPP, J. S., and LOOMIS, E. A., "Continuous sleep treatment", *Am. J. Psychiat.*, 1950, **106**, 821-829.
15. DAVIDENKOV, "Thérapeutique par le sommeil artificiel prolongé", *Médecine et hygiène*, 1951, **9**, 204-209.
16. DELAY, J., DENIKER, P., and HARL, J. M., "Utilisation en thérapeutique psychiatrique d'une phénothiazine d'action centrale elective (4560 R.P.)", *Ann. Medico-Psychol.*, 1952, **110**, 112-117.
17. EY, H., *Études Psychiatriques*, 1948. Paris: Deselee de Brouwer et Cie.
18. *Idem* and BERARD, E., "Les nouvelles techniques de cure de sommeil dans la pratique psychiatrique", *Evol. Psychiat.*, 1952, **4**, 661-682.
19. FRENCH, J. D., VERZEANO, M., and MAGOUN, H. W., "An extralemniscal sensory system in the brain", *Arch. Neurol. Psychiat.*, 1953, **69**, 505-518.
20. FURRER, J., "Unsere Erfahrungen mit den Somnifendauernarkosen bei Psychosen", *Schweiz. med. Wochensh.*, 1924, **54**, 275-280.
21. GRIESINGER, W., *Mental pathology and Therapeutics*. Trans. by Robertson and Rutherford, 1882. Wm. Wood and Co.
22. HELDT, F. J., "The therapeutic use of prolonged sodium amytal narcosis", *Am. J. Psychiat.*, 1947, **104**, 27-35.
23. HESS, W. R., "Über die Wechselbeziehungen zwischen psychiatrischen und vegetativen Funktionen", *Schweiz. Arch. für Neurol. u. Psychiat.*, 1924, **15**, 260-377.
24. HIEBEL, G., BONVALLET, M., and DELL, P., "Action de la chlorpromazine (Largactil, 4560 R.P.) au niveau système nerveux central", *Sem. Hop.*, 30em année, **37**, 2346.
25. KLÄSI, J., "Über die therapeutische Anwendung des Dauernarkose mittels Somnifens bei Schizophrenen", *Zeitsch. f. d. ges. Neurol. u. Psychiat.*, 1922, **74**, 557-592.
26. KUBIE, L., "Some implications for psychoanalysis of modern concepts of the organization of the brain", *Psychoanal. Quart.*, 1953, **22**, 21-68.
27. LEHMANN, H. E., and HANRAHAN, G. E., "Chlorpromazine: new agent for psychomotor excitement and manic states", *Arch. Neurol. Psychiat.*, 1954, **71**, 227-237.
28. MAGOUN, H. W., "Ascending Reticular Activating System", *Biology of Mental Health and Disease*, 1952, pp. 219-224. P. B. Hoeber.
29. MARGOLIN, S. G., "Psychotherapeutic principles in psychosomatic practice", in Wittkower and Cleghorn's *Recent Developments in Psychosomatic Medicine*, 1954, pp. 134-156. London: Sir Isaac Pitman and Sons, Ltd.
30. MONNIER, M., "Die Dauerschlafbehandlungen des Schizophrenen mit der Narkosenmischung von Cloetta an der Psychiatrischen Klinik Burghölzli-Zürich", *Nervenarzt*, 1936, **9**, 14-29.
31. MULLER, M., "Die Dauernarkose mit flüssigem Dial bei Psychosen, speziell bei manisch-depressiven Irresein", *Zeitschr. f. d. ges. Neurol. u. Psychiat.*, 1927, **107**, 522-542.
32. PALMER, H. A., "The value of continuous narcosis in the treatment of mental disorders", *J. ment. Sci.*, 1937, **83**, 636-678.
33. *Idem* and BRACELAND, F. J., "Six years experience with narcosis therapy in psychiatry", *Am. J. Psychiat.*, 1937, **94**, 37-53.
34. SCOTT, W. C. M., "Patients who sleep or look at the psychoanalyst during treatment—technical considerations", *Int. J. Psychoanal.*, 1952, **33**, 465-469.
35. SHAGASS, C., Personal communications.
36. *Idem*, "Clinical significance of the photoclonic response in psychiatric patients", *E.E.G. and Clin. Neurophysiol.*, 1954, **6**, 445-453.
37. SIMMEL, E., "Neurotic disturbances of sleep", *Int. J. Psychoanal.*, 1942, **23**, 65-68.
38. STASIE, C., AZIMA, H., HAUFFMAN, M., and HOWLETT, J. A., "Jaundice occurring during the administration of Chlorpromazine", *Canad. Med. Ass. J.* (In Press).
39. TRENEL, *Rapport au congrès des aliénistes français sur le traitement des états d'agitation et d'insomnie*, 1903.
40. WOLF, H., "Trionalkur", *Centralblatt für Nervenheilkunde*, 1901, 286-283 and 545-547.
41. WORTIS, J., *Soviet Psychiatry*, 1950, pp. 161-165. Williams and Wilkins Co.