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Thesis presented for the Degree of M.D.

on

HYPNOTICS AND SEDATIVES WITH SPECIAL  
REFERENCE TO THEIR USE IN MENTAL DISEASES.

by

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It is well known that sleep is very intimately related to bodily and especially mental health and the function of sleep and the disorders of sleep which occur in the various forms of insanity must always be subjects of the greatest interest to alienists. Sleep involves a wide extent of physiological conditions and sleeplessness is related to a great many pathophysiological problems.

Although the phenomena of sleep are so well known, the factors which produce this condition are still not fully understood.

Sleep consists in a diminution of metabolic processes all over the body, a relaxation of the voluntary muscles, a diminution in the secretory activity of all glandular structures, a slowing of the heart and a slowing and deepening of respiration, a fall of blood pressure and temperature, a lessening and in some cases an alteration in reflex excitability, a contraction of the sphincter muscle of the iris, and lastly loss of consciousness.

Neither falling asleep nor wakening is a sudden event, but is a more or less arbitrarily fixed point in a gradual process. During sleep there is a marked decrease in the activity of the cerebral circulation, which /

which is the result of the fall of blood pressure and weakened cardiac action and is accompanied by anaemia of the brain. These vascular changes although having a significant importance are quite inadequate to cause sleep. The phenomena which occur during sleep are secondary conditions and cannot either separately or collectively be considered as being the aetiological factor. There are many theories and definitions of sleep. It has been described as a purely psychic rest and ascribed to exhaustion of the vaso-motor centre, and the nerve cells of the brain.

It might be expected that sleep was due to some special condition of the central nervous system and especially of the cells of the cerebral cortex, and it is interesting to find that certain changes have been observed in these structures. These changes are analagous to those seen in a gland cell after its contents have been discharged and it becomes functionally inactive. At the same time physical alterations have been observed in the dendrites, which may be of considerable importance but which are doubtless secondary to processes taking place in the cell itself and its nucleus.

Lepine and Duval elaborated their theory that the neurons possessed an amoeboid movement, whereby the terminal /

terminal branchings of the dendrites might be approximated or separated, sleep being represented histologically by a retracted state of the neurons with consequent diminished faculty of passage of stimuli from one neuron to another.

Lugaro taking the same data supposes sleep to be the result of an expanded state of the branchings of the neurons, which causing an opening up of nervous paths leads to an unrestricted flow of nerve impulses, manifesting itself by confusion of thought, loss of consciousness and sleep. It is however impossible to imagine that peripheral events, such as the retraction or expansion of the dendrites are primary cell changes.

All that can be said at present therefore is that sleep represents a rythm of organic habit and is traceable in all forms of organic life and that sleeping and waking are the expressions of the rythmical activity of the central nervous system and probably correspond to certain anabolic and catabolic changes in the cells of the cerebral cortex.

Although the factors at work in the causation of sleep are not fully understood the predominant need of sleep by the body is fully realised by the fact that some authorities state that deprivation of sleep produces /

produces death more rapidly than deprivation of food.

Disorders of sleep and insomnia occur in many diseases but perhaps in none more frequently than in mental disorder and disease.

Allbutt describes four groups of insomnia -

1. - Irritative Insomnia.
2. - Toxic Insomnia.
3. - Psychological Insomnia.
4. - Insomnia due to changes in the habit of life.

Psychical Insomnia is the form of insomnia which I will consider in this thesis, and occurs in all forms of mental disease and disorder. Whatever may be the cause, the disorders of sleep play an important part in the genesis of nearly all cases of insanity and every alienist is sufficiently alive to the fact that a few hours of normal sleep are of more importance to the patient than anything else. Insomnia is frequently one of the earliest symptoms of insanity and occasionally it may be an isolated symptom, and it is possible that cases of mental breakdown might be averted if the sleeplessness could be overcome.

Sleeplessness is one of the most important symptoms calling for treatment, for in the mentally sound its persistence may lead to a complete mental breakdown and in the subjects of mental disease it aggravates the condition and is followed by a greater degree /



degree of physical and mental prostration than almost any other symptom.

As the symptoms of insanity are the manifestations of disordered psychical mechanisms, depending on various conditions, treatment should be directed not only to removal of the cause but to keeping the parts at rest to allow of their return to a healthy balance. Hypnotics are frequently very valuable in attempting to abort an incipient attack of mania or melancholia. In the early stages of mania, frequently after a few nights of enforced sleep by means of a suitable drug, the excitement subsides and convalescence sets in with a return of natural sleep. The early use of hypnotics in a case of developing mania may frequently prevent it passing into a condition of acute delirious mania. In the insanity which occurs about the menopause, with depression of spirits, suspicions, fears, delusions and impulses toward suicide, hypnotics are undoubtedly serviceable. In cases of senile insanity hypnotics serve a double purpose, not only by giving the patient sleep and so preventing exhaustion, but by their calmative effect they prevent the patient sustaining self inflicted injuries which otherwise would result.

All degrees of pathological insomnia imply a lesion /

lesion of the psychical realms and since natural sleep is probably the result of changes incident on healthy fatigue of these realms, it follows that sleeplessness is the result of some interference with their physiological discharge of function and whatever the cause may be, it ultimately acts always in the same way. For convenience these causes may be divided into -

1. - Physical
2. - Mental.

Insomnia from physical causes may be slight or it may be so severe as to lead to mental disorder, so long as there is only temporary interference with the psychical realms, these are able to meet the interference and are able to accommodate themselves to the condition.

When the physical cause cannot be readily removed, the excessive fatigue alters the healthy working of the psychical realms and as a result mental symptoms develop.

In the sleeplessness of established mental disease there is a more widespread lesion of the psychical processes by which the various disordered mental workings are evidenced. It does not signify whether the causes are toxic, autotoxic or the result of gross brain lesion. The sleeplessness may show itself in deficient /

deficient amount or defective quality of sleep.

It is well known that the common action of all sleep-producing drugs is an interference with the higher cerebral functions, and those drugs which have this action as little mixed up with other actions as possible are the agents which induce a sleep most approaching the natural and that other drugs which not only do this but also give rise to changes in the state of the blood vessels are especially attended with more or less discomfort when their primary effect has passed off and the waking state supervenes.

The hypnotics belonging to the Methane series, e.g. CHLORAL HYDRATE, PARALDEHYDE, SULPHONAL, TRIONAL, VERONAL and many others owe their action to the depression which they produce in the central nervous system. Their action in this respect is due to the combination of Hydrogen and Carbon which produces a specific depressing effect on the protoplasm of the nerve cells. Many of the drugs in this series cause a preliminary short stage of excitement which is followed by unconsciousness and sleep. The depression of the central nervous system is always accompanied by anaemia of the brain and it was considered that the drugs by producing this anaemia starved the nerve cells and caused sleep. These drugs are known to act on the nerve cells directly and there is every possibility /



possibility that the cells depressed by these drugs undergo the same changes as they do in natural sleep and that the alterations in the brain circulation (anaemia) are the result and not the cause in the depression in both conditions. As a general rule those drugs which cause a lowering of the blood pressure may be considered as more potent and serviceable as hypnotics.

From the pharmacological point of view the ideal drug is that which has the greatest power of selection, not necessarily the most physiologically active in a general sense. A drug which is limited in its effects to a comparatively small group of cells is necessarily a remarkably safe therapeutic agent, and can be pressed to produce the full effect required without unpleasant consequences to other cells or organs.

A perfect hypnotic should exert its toxic influence on the cerebral cortical cells only, leaving the lower level centres to pursue their proper functions undisturbed.

Clinical observations on the actions of medicines both new and old is probably one of the most valuable fields for clinical work in hospitals of the insane. The most complete clinical observations on hypnotics are those made in Asylums and in this class of practice these /

these are most frequently used. The Asylum clinician has many advantages in regard to the observation of the action of these drugs.

In hospitals for <sup>the</sup> insane the diet and habits of the patient are under constant control, and observations on the results of treatment are thus all the more reliable.

The investigation of the therapeutic action of drugs has frequently been of the most unscientific kind, nor can the present methods of arriving at their actual value be considered as satisfactory or scientific. Analytic and synthetic chemistry are daily placing in the hands of physicians new compounds the physiological action of which has been to a certain extent demonstrated and their beneficial effect in diseased conditions testified to by more or less scientific authorities. A common method of the present day is for a firm of chemists to procure a new chemical compound, whose immediate physiological effect has been tested by laboratory experiments, to persuade a number of physicians to give it a trial and to use any favourable reports of the trials which they obtain as an advertisement, at the same time ignoring all others. The new drug is then usually advertised in a monthly drug list which contains a certain amount of medical information to give it the appearance /

appearance of a therapeutic journal of a professional character. This new drug is then tried by a few medical men or the public perhaps reading the advertisement or hearing of the marvels from the chemist, ask their doctor to prescribe it for them. Occasionally the drug becomes fashionable and remains so until a later novelty takes its place. The remote effects of these drugs are frequently not at once ascertained and it is only after a time that their defects or uselessness or real use are demonstrated by a very desultory experience.

Among the large number of new drugs which are introduced in this way, a rather large proportion belong to the class of hypnotics.

Probably the reason of this is the fact that hypnotic properties are possessed by a very large number of carbon compounds and every firm of chemists wishing to exploit this class of drugs finds it very easy to prepare a modification of some previously existing hypnotic and claim it as an entirely new drug under a new trade name. Many of these drugs are in daily use by the medical profession of which the British Pharmacopoeia has no cognisance. These remedies may be good or may be bad, may be invaluable in the treatment of disease or most insidiously harmful while appearing to do good, or may even be dangerous /

dangerous although advertised as harmless. The result of this is that the practitioner who has to use these drugs becomes rather bewildered at the claims made about them and hesitates to use any of them. There is no doubt however that some of the recent synthetic preparations of the hypnotic group have been found satisfactory clinically, and are really very serviceable to the physician.

They vary considerably in their chemical composition and their physiological effect, so that instead of increasing the dose of a mild hypnotic if it fails to produce sleep, another of greater strength may be employed. When hypnotic drugs have to be used over a long period change from one drug to another is frequently advisable.

The ideal hypnotic has not yet been discovered. Among the many properties of this ideal drug, it should be tasteless, easily soluble, quickly absorbed, easily and rapidly eliminated, leaving no cumulative effect behind it. The sleep produced should be quiet, dreamless and natural and should not produce disagreeable after effects by upsetting the digestive or other functions of the body.



CLASSIFICATION OF HYPNOTICS.

The usual classification of hypnotic drugs is that elaborated by Fraenkel who arranged them in three classes, each named after its most typical chemical constituent. The drugs are grouped according to the chemical factor supposed to determine the physiological action.

1. Those containing a halogen element (Chlorine or Bromine) to which the hypnotic effect is due.
2. Those in which the hypnotic effect is produced by the presence of Alkyl groups especially Ethyl (C<sub>2</sub> H<sub>5</sub>).
3. Those which are chemically Aldehydes (containing the C.H.O. group) or Ketones (containing the C.O. group.)

Although Fraenkel's classification may be interesting from a scientific point of view, it is not of any great value therapeutically, and it is of much more value to the practising physician to know which hypnotics are mild in action which are powerful in action, which are really dangerous, and which can be used to produce a general sedative effect at the same time.

It is my purpose in this thesis to describe the action and therapeutics of each hypnotic and sedative which /



which has been found useful, based on the results of my own experience of their use during sixteen years experience in the treatment of mental disorders and diseases as an Asylum physician, and supplemented by the experience of others who have used them.

Among the milder acting hypnotics and sedatives may be included AMYLENE HYDRATE, CHLORALAMIDE, HEDONAL, DORMIOL.

AMYLENE HYDRATE is a colourless liquid, having a burning taste and characteristic aromatic odour. The usual dose is from 30 to 60 mins, and it is usually prescribed in capsules or dissolved in alcohol. It is a safe hypnotic, usually prompt in action and produces no disagreeable after effects. Its action is somewhat similar to Paraldehyde, but its effect is more prolonged, sleep lasting generally 6 - 8 hours and its taste is less nauseous than Paraldehyde. I have found it useful in the sleeplessness of neurasthenia, of early general paralysis and of mania. It is also used in sleeplessness of alcoholic insanity.

CHLORALAMIDE is a synthetical derivative of Chloral, it is a bitter crystalline product, which is insoluble in hot or cold water, and alkaline solutions. It is readily /

readily soluble in alcohol and especially in acidulated alcohol. Spiritus Aetheris Nitrosi is certainly the best solvent. It should always be dissolved before administration as when given in dry form its action is apt to be delayed. Its taste is not usually objected to, and it is not known to produce any unpleasant after effects, it may therefore be considered a safe hypnotic. The usual dose is 20 to 30 grs. I have found it useful in senile mania, in insomnia of melancholia, early general paralysis, and alcoholic insanity. As its action is similar to that of chloral, it is sometimes used as a substitute for this drug when the latter is contra-indicated on account of organic disease of the heart.

HEDONAL is a derivative of Urethane, in the form of a white, rather insoluble powder and should be given in cachets with a hot drink afterwards. Its unpleasant burning taste is an objection. The usual dose is 10 to 30 grs. It has no depressant effect on the heart, and may be considered a safe and harmless hypnotic. Quiet refreshing sleep is usually produced in half an hour which usually lasts for 7 or 8 hours, and produces no bad after effects.

Its chief objection is its bad taste and insolubility, but this can be overcome by administering the /

the drug by rectum. It has a sedative action on all nerve cells.

I have found it useful in all forms of nervous insomnia, in sleeplessness of melancholia and it is useful as a calmative in the excited states of melancholia and "folie circulaire". It has also been used with success as a hypnotic in the excited states following epileptic seizures. Dr. Haverkant found it to be a reliable and prompt hypnotic in doses of 30 to 60 grs. in cases of marked excitement when other drugs such as Sulphonal, Chloral and even Morphia have failed. It is a useful drug to combine with Opium and in this combination I have found it serviceable as a hypnotic in acute melancholia, especially when visceral delusions are present. An important feature in the action of Hedonal is the poly-urea which it produces. The urine is not changed in any way and the increased flow is beneficial in mental diseases. Unfortunately Hedonal like many other hypnotics, quickly loses its effect and it requires to be given in increasing doses.

DORMIOL or (AMYLENE CHLORAL) is a product of the combination of Chloral with Amylene Hydrate and is a colourless fluid having a burning taste and an aromatic menthol-like odour. It is usually obtained commercially in 10% solution in water. The usual dose is 10 to 30 mins and is most conveniently given with mucilage/

mucilage or syrup of oranges. It may also be given by rectum with mucilage. It is fairly prompt in action, refreshing sleep taking place in half an hour and lasting usually for 6 or 7 hours. No objectionable depressant after effects have been noticed beyond slight drowsiness next day in some cases.

I have found it useful in the insomnia of melancholia especially in such cases where delusions of a hypochondriacal nature are present, but it is of no avail where there is much restlessness. It is useless in mania, general paralysis and epilepsy. The dose generally given is 20 grs. It is advisable not to repeat the dose on two successive nights. Some authorities consider that this drug possesses all the virtues of Chloral as a hypnotic without its drawbacks.

Speaking generally all these drugs can be looked on as safe hypnotics, useful in simple insomnia and in mental cases where there is not much excitement. The sleep produced is like natural sleep.

The next group of hypnotics and sedatives to be considered as those which act more powerfully, some of them being especially valuable as sedatives and motor depressants.

PARALDEHYDE is a colourless fluid with a very unpleasant odour and taste which it is practically impossible /



impossible to conceal. It may be prescribed in cachets or given with flavouring agents. Strongly sweetened tea masks the taste and it is sometimes given in crushed ice. It is fairly soluble in water and readily mixes with spirit. The pharmacopoeal dose of  $\frac{1}{2}$  to 2 drachms can be exceeded considerably with perfect safety. It is very prompt in its action, and at times acts so quickly that the patient is sound asleep within five minutes after getting it. It produces a light natural sleep of from 5 to 8 hours duration, the first part of the sleep is that from the drug and this then passes into natural slumber. In fact it puts to sleep and nature continues the sleep. It does not interfere with the appetite nor disturb digestion and produces no headache or lassitude next day. It has no depressant action on the heart. The chief objections to its use are its disagreeable taste and that the breath smells of Paraldehyde for several hours after administration.

Gordon has demonstrated that in minute doses Paraldehyde aids the peptone forming power of pepsine accelerating the digestion of fibrin, while this process is retarded with most other hypnotics and sedatives. It slows but strengthens the heart's action, and does not depress the respiratory centre, it is therefore a useful hypnotic and sedative when there /



there is organic disease of the heart. It also possesses a powerful diuretic effect.

Although Paraldehyde is apt to be overlooked among the large number of newer hypnotics there is no doubt that it should be placed in the first rank as the best, safest and most efficient sleep producing drug we have at our disposal. It seldom fails, it may be given over long periods without losing effect and without increasing the dose. It seems to restore the sleep habit of the brain and can be discontinued readily without any felt want or craving. It is certainly the drug to use when the patient has difficulty in getting off to sleep, but whose sleep continues for a few hours when started.

It is of no use as a sedative during the day. It appears to act on the highest cortical cells and not on the motor areas. The dose of Paraldehyde should never be less than 1 drachm and much larger doses can be given with safety. There are very few recorded cases of poisoning by Paraldehyde. The ill effects produced by large doses are not serious, and it is recorded that a single dose of 3 oz. was given in a case, and beyond causing prolonged and deep sleep nothing untoward occurred. Older patients whose blood pressure is above normal require large doses.

The /

The forms of mental disease in which Paraldehyde has been given with good results are numerous. I have found it a valuable hypnotic in all conditions of simple and subacute mania, but it has little effect when the excitement is extreme and prolonged, and in such cases the stimulating effect of the drug is apt to aggravate the condition and make the patient worse. In acute mania good results are obtained by combining a one drachm dose of one of the Bromides along with it at bed time. It is one of the best drugs to use in the insomnia which accompanies melancholia but slightly larger doses are required, even up to 3 drachms, and it may be given to melancholics for months and when stopped natural sleep follows. It is the best hypnotic to use in general paralysis as these patients do not taste it and consequently never complain of what is its greatest objection.

In the restlessness and excitement of senile mania, Paraldehyde is the best hypnotic at our command. In such cases I give it in large doses 2 drachms at least, and a nightly dose of Paraldehyde given to a restless senile ensures a good night's rest followed by renewed vigour and gradually improving strength as a consequence.

SULPHONAL /

SULPHONAL is a very insoluble crystalline powder, it possesses no taste nor odour and is chemically very stable. It may be dissolved in hot tea or water and also in spirits, heating has been found to make the action more prompt. It is inadvisable to give it in an undissolved state and its administration in tabloid form is to be condemned. Sulphonal unfortunately is slow in action, sleep not usually being induced for two hours and frequently longer, the sleep produced is light and natural and lasts for six to eight hours.

Its hypnotic effect is prolonged as the drug is retained in the system, causing giddiness and unpleasant feelings next morning with drowsiness all day. It has little or no action on the heart, but it is not readily excreted and its cumulative action is produced by acting as a blood poison destroying the Red Blood Corpuscles by breaking up their pigment and producing haematoporphyrin in the urine. The usual dose is 10 to 30 grs. This toxic condition of haematoporphyrinuria is the chief objection to its use. The toxic dose varies enormously in different individuals, it has been known to occur after a single dose of the drug, causing death, and moderate doses in predisposed individuals may have the same effect. Women are more susceptible to its action than men, and Sulphonal should not be given to anaemic patients and to /

to subjects of kidney disease and to old people who have debilitated constitutions.

I have noticed that Sulphonal exerts a more powerful effect on women during their menstrual periods than at other times and its use should be restricted in such conditions.

The chief symptoms exhibited in Sulphonal poisoning are digestive disturbances, pain in the region of the stomach, vomiting, diarrhoea or constipation, mental dulness, headache, faintness, muscular weakness, and incoordination, slurring and inarticulate speech, coma and delirium, and the appearance of haematoporphyrin in the urine. The dangers of this toxic condition should never be lost sight of in prescribing Sulphonal and the patients who are getting it should be under constant supervision and the following precautions taken.

It should not be given every night, but should be intermitted once or twice every week, in fact twice a week is sufficient and on the other nights if a hypnotic is required some other drug should be given. I find it a good rule to order a large drink of some hot fluid to be given after each dose of Sulphonal.

The patient's urine should be regularly examined while giving Sulphonal. The bowels should be very carefully /

carefully attended to and constipation avoided by giving frequent doses of saline aperients.

It is safest to have patients confined to bed while getting Sulphonal. In spite of the dangers attaching to the administration of Sulphonal it is a most useful drug in the treatment of insanity. On account of its very slow action it is necessary to give Sulphonal two or three hours before bed time to ensure sleep that night. Sulphonal besides being a hypnotic is a sedative or motor depressant and it is mainly on account of this action that it is used in Asylum practice.

It is most frequently used with good results in cases of motor excitement, restlessness, noisiness, and in troublesome unmanageable cases of chronic mania. It has been prescribed with good effect in the restless conditions of simple mania and in senile mania where there is much motor restlessness with its consequent exhaustion. I have found small doses, 5 to 10 grs. either alone or combined with Bromide of Potass most useful. In the early stages of General Paralysis with restlessness and excitement it is valuable. I have frequently prescribed it with success in doses of 15 grs to anticipate an attack of excitement in the recurrent /



recurrent forms of mania and I have found that it occasionally aborts this. It is of no use except in large and dangerous doses in cases of acute delirious mania and should not therefore be given in these conditions. Sulphonal cannot be recommended in melancholia in any form, as, although it may subdue the restlessness if present, its effect is to stupify too much and increase the dangers of toxic symptoms appearing.

BROMURAL is a Urea derivative containing about 35% Bromine and consists of white needle-shaped crystals having a bitter taste and a camphoracious odour, it is not soluble in cold water and readily soluble in hot water, spirit or alkaline solutions. It should never be given in dry form and especially in tabloids. The dose is 5 to 15 grs. It acts fairly promptly, inducing sleep in twenty minutes, sometimes sooner and produces two to five hours sleep. The sleep produced is quiet and natural and free from disagreeable after effects.

The hypnotic effects of this drug are due to the combined action of Urea and Bromine elements. It is a satisfactory and useful drug and I have found it serviceable in all forms of sleeplessness occurring in mental diseases when excitement is absent. It is most /

most useful in quiet cases of melancholia when sleeplessness is the most prominent symptom and is specially valuable in treating female patients. It is an exceedingly safe and reliable hypnotic. It has no cumulative action and no ill effects have been noticed although it is prescribed over a long period.

CHLORAL HYDRATE occurs in the form of colourless crystals having a pungent peculiar odour and a bitter taste. It is fairly soluble and is readily decomposed by Alkalies. This is probably one of the oldest hypnotics in general use and is still considered by many authorities as the most efficient hypnotic. Some writers condemn its use rather unfairly and in consequence it has rather fallen out of fashion having been replaced with some of the more recent synthetic preparations which are undoubtedly much less reliable. Liebrich thoroughly investigated the action of Chloral and he suggested that its action as a hypnotic was due to its decomposition by the alkalinity of the tissues, and the resulting formation of Chloroform, this is disputed however as Chloroform is never detected in the breath or the tissues and Chloral can be regained from the urine. Chloral depresses the central nervous system, but rarely produces a preliminary stage of excitement /

excitement. It acts chiefly by depressing the sensory or receptive functions of the brain and also its motor activity, and it renders the motor areas of the brain cortex less irritable. It depresses the vaso-motor centre, causing dilatation of blood vessels, it lowers the blood pressure and slows the action of the heart. It also lowers the temperature through depressing the basal ganglia where the heat centre is situated. In poisoning by Chloral death results from failure of respiration. Ziehen considers that Chloral is such a dangerous drug that it should be excluded from the pharmacopoeia. In spite of opinions against its use, it is on the whole a most reliable drug and its main disadvantages are its unpleasant taste, its depressant action on the heart and vaso-motor centre and the variability of its toxic dose occasioned by idiosyncrasy.

It must however be remembered that the Chloral habit is easily contracted. The dose is 5 to 30 grs. and owing to its irritant action it should always be given largely diluted. In a concentrated form it is apt to cause nausea and gastric disturbances. In moderate doses Chloral induces a prompt and natural sleep lasting from 6 to 8 hours, producing no further effects than a slowing of the pulse and respiration.

It /

It is largely used in Asylum practice, and I have found it most serviceable in treating the sleeplessness which accompanies the acute insanities, acute alcoholism, general paralysis and in the excitement of epileptic insanity.

Clouston believes that it has a subtle influence for harm on the brain and thereby reduces its tone. It is a useful drug in the treatment of all convulsive forms of insanity but it should be sparingly used as a sedative for use in the daytime. Its regular and continued use as a sedative in cases of acute maniacal attacks should be condemned and it should never be given in cases of senile mania with arterial degeneration, cardiac debility or renal disease.

Chloral is frequently combined with one of the Bromides, usually Bromide of Potass in doses of 20 grs. with 30 or 40 grs. Bromide as a useful hypnotic in mania and melancholia and especially in the agitated form of the latter. I have found it useful in the treatment of melancholia when hallucinations of hearing are present. In giving Chloral it should be remembered that there is a great loss of heat induced and there is a consequent risk of a patient catching cold and pneumonia supervening. I have found much better results from combining Chloral with Bromide than /

than by giving it alone, and the same effect produced as double the amount would produce if given alone.

Chloral is most valuable in the treatment of the status epilepticus and in this condition a large dose given as an enema produces a salutary effect.

TRIONAL is a colourless crystalline powder rather insoluble in water but readily soluble in spirit, having a bitter taste. It should be given dissolved in spirits or in hot milk, tea or water. It may be given as an enema. Dose 10 to 30 grs. It is somewhat slow in action but produces its effect quicker than Sulphonal and induces a quiet natural sleep lasting from 6 to 8 hours, and does not produce drowsiness or feelings of discomfort the next day. It is cumulative in the system and the toxic effects producing haematoporphyria are similar to those produced by Sulphonal, but as a matter of fact this condition is rarely produced in the case of Trional, only three or four cases having been reported. Soukhanoff experimenting on the neuron of animals found that this drug produced degeneration of the neuron sooner than any known drug. Trional is sometimes combined with Paraldehyde which gives a rapid and more certain action than when prescribed alone. As a hypnotic in cases of mental derangement Trional is the safest of the Disulphone /



Disulphone group of drugs. It is more readily decomposed in the system and eliminated more rapidly than Sulphonal. It produces no ill effects on the bodily organs. Trional is a most efficacious sleep producing remedy in all forms of melancholia and also in the insomnia of epileptics. I have found it of little use in impulsive forms of insanity, general paralysis and alcoholic insanity.

I have found Trional useful in anticipating an attack of excitement in recurrent forms of mania, and I specially refer to a case in which its use in this way was very successful. It is that of a lady who for three years had laboured under frequently recurring attacks of excitement which recurred regularly, every four or six weeks. During the intervals between the attacks she was rational, pleasant and industrious, but during her excited period she was extremely troublesome and degraded in her habits. As she showed well marked symptoms before her attacks appeared, among them sleeplessness and confusion of mind, I gave her Trional in grs XV nightly for a few nights before the excitement appeared. At first there was little apparent result, but as the treatment was persevered in, it was noticed that her attacks of excitement became less severe and that the intervals between /

between these attacks increased in length. After two years treatment in this way her excitement quite disappeared and it was found possible to discharge her to the care of her friends, after an interval of nine months without an attack of excitement. She herself felt that the dose of Trional did her good and she knew exactly when to request me to give it to her, as she recognised too well the earlier symptoms of her impending excitement. She informed me that she was confident that the drug did her good and that she felt that it gave her confidence to fight against the sense of loss of selfcontrol which she always experienced.

In cases of insanity where pain accompanies sleeplessness small doses of Opium are frequently combined with Trional with good results. It is better not to give Trional continuously and in most cases it should only be given on every second night.

VERONAL - A Urea-containing hypnotic which occurs as a white crystalline powder, possessing no odour and with a slightly bitter taste, practically insoluble in cold water but it dissolves freely in dilute acids or hot liquids such as tea, soup etc. It should never be given in milk as the alkaline salts decompose it and give it an unpleasant taste. The necessary dose is not /

not yet determined (3 to 5 grs being the ordinary minimum), but this dose is usually exceeded considerably in Asylum practice. A calm restful sleep is usually induced in an hour's time and lasts from 6 - 8 hours. It is apt to produce after effects in the way of drowsiness, headache nausea and irregular pulse next day. It produces no bad effect on the heart, respiration or kidneys. It frequently produces obstinate constipation.

Fischer and Hoppe experimenting found Veronal in the urine 40 minutes after being given by the mouth, and this time corresponds with the onset of its hypnotic effect and that single doses of 8 grs are excreted in four days if the kidneys are healthy. Veronal is at the present time popular with the public and profession as a safe and efficient hypnotic. The safety is probably due to the fact that it contains no Chlorine and therefore does not depress the heart. Its insoluble character makes its absorption slow and it is easily eliminated by the kidneys. Like all other sulphur containing hypnotics it may set up toxic symptoms and this occurs more readily in women than in men. It should not be given when kidney disease is present. Its prolonged use is apt to produce neuritis with a spastic condition accompanied by loss of knee jerks /

jerks. I have found Veronal useful in the sleeplessness of mild mania, and in ten grain doses it produces a good effect in cases of senile dementia with sleeplessness and restlessness. It has been found useful in the sleeplessness which follows the excessive use of alcohol. It is however useless in melancholia and hysterical conditions and when there is much excitement and in general paralysis and all forms of impulsive insanity. I find that Veronal Grs. V combined with Sulphonal Grs XV is a useful sedative in the excitement of chronic mania, and this combination is also serviceable in the restlessness and sleeplessness of senile mania.

NEURONAL one of the newer hypnotics is a combination of Bromine and occurs as white almost colourless crystals with slightly bitter taste resembling menthol and produces a similar local anaesthetic taste to menthol if applied to the tongue. It has a slight odour of Bromine. It is sparingly soluble in water, but readily soluble in alcohol, and olive oil. It is readily decomposed by alkalies so should not be prescribed with them as Prussic Acid is formed. It is fairly prompt in action inducing a deep and rather heavy sleep in 20 to 30 minutes which generally lasts for seven or eight hours, and is apt to cause drowsiness /

drowsiness and heaviness next day, suggestive of a drug sleep. It is inclined to cause digestive disturbances and is said to have a depressant action on the heart. After administration of Neuronal, Bromine is excreted in the urine and can be detected there after the lapse of two hours or so. The usual dose is 5 to 15 grs as a simple hypnotic but much larger doses up to 45 grs are given in Asylum practice. Although it is a powerful hypnotic it is rather uncertain in its action but some cases do well with it. I have tried it in the restlessness and sleeplessness of acute mania with success, and in smaller doses I have found it useful in the early stages of mania and general paralysis. As this drug contains Bromine, it has been used in large doses, 20 to 30 grs as a sedative in epilepsy and in all convulsive forms of insanity. Dr. Siebert who used it largely for a time states as his experience that as a hypnotic it is rather less valuable than Trional but safer to use. It is noticeable that there is a considerable amount of mental depression left after administering the drug and this is not in favour of its use.

PROPONAL - A Urea derivative and occurs as a colourless crystalline body, it is very insoluble in water but /



but easily dissolved in alkalies and it has a slightly bitter taste. The usual dose is 2 to 8 grs and induces sleep in ten or fifteen minutes, which lasts for seven or eight hours. It possesses a more powerful hypnotic action than Veronal and has the same objections as that drug. The great objection to its use is that its toxic dose is little more than the usual hypnotic dose. It is used in similar cases to those in which Veronal is used, but cannot be recommended.

ADALIN is the latest synthetically prepared hypnotic and is a Urea derivative. It occurs as a soft crystalline substance, odourless and with a faintly bitter taste. It is soluble in water and its effect is more rapidly produced by dissolving in hot fluids, such as water, tea or milk. It is usually given dissolved but may be given in cachet followed by a hot drink. The dose is 10 to 30 grs. It is free from objectionable taste and possesses no disagreeable after effects. Its rapid combustion in the system, and speedy elimination by the kidneys are greatly in its favour and there is no other hypnotic or sedative which we possess of similar potency after whose use the patient awakens so bright and fresh. It is stated in its favour that it may be given continuously for long periods without bad effects. This drug has been found useful in the restlessness /

restlessness and sleeplessness of neurasthenic states, in melancholia, in epilepsy. I have used it with success as a sedative in cases of simple and subacute mania, but it is useless even in very large doses in acute maniacal excitement. It is also given with benefit in the early restless stages of general paralysis, and I have found it useful in senile dementia. It is not of much use in the very restless cases of melancholia.

TETRONAL is a crystalline rather insoluble body.

It is usually given in hot liquid such as tea or soup or in cachet with hot drink afterwards, to facilitate its absorption in the stomach. It is less soluble than Trional and its action is similar to that of Sulphonal and Trional. Its usual dose is 5 to 20 grains and its toxic effects are similar to those of Sulphonal but more readily produced. On account of the dangers which attend its administration in this way, it is a drug which cannot be recommended.

ISOPRAL is a crystalline substance soluble in water, and alcohol. It has an unpleasant pungent taste and it possesses a camphoracious odour. It is usually prescribed in sugar coated pills or dragees. On account of its very unpleasant taste it is sometimes administered /

administered by inunction. The drug is first dissolved in alcohol and then mixed with olive oil and rubbed into the skin of the upper arm or thigh. The usual dose is 8 to 15 grs and 30 grs should be considered the maximum dose of the drug. It acts promptly inducing a tranquil sleep in ten to twenty minutes, which usually lasts from eight to ten hours. As it is apt to disturb digestion, reduce the blood pressure and depress the heart, probably owing to the presence of Chlorine, it cannot be considered one of the safest of the hypnotics. It seems to be rapidly excreted, and is therefore not considered cumulative. It is also reported to have a diuretic action. Isopral besides being a hypnotic is also a motor sedative. It is used in similar cases in which Chloral or Sulphonal are usually prescribed. Its advantage being that it has not the bad toxic effects of Sulphonal. I have used it with good results in 10 grain doses in the restlessness and sleeplessness of senile insanity.

BROMIDES - These exert their action by means of three factors :-

1. - Salt action.
2. - Specific effect on central nervous system.
3. - The elimination of free Bromine during the excretion of the drug from the skin and mucous membranes.

After /

After administration Bromides are soon absorbed from the alimentary canal and enter the blood as Sodium Bromide and rapidly develop their specific action directly on the central nervous system. This action begins with depression of the psychical functions, the motor areas, the medulla and the cord. The psychical and motor centres, the medulla and cord become affected at the same time. The psychical condition is characterised by diminished intelligence, general mental apathy, confused thoughts and expressions, a general dissolution of association giving rise to lapse of memory.

There is great diminution of excitability of the motor areas and the effects on the medulla and cord are shown by general diminution of all reflexes, including that of the mucous membrane of the genito-urinary tract giving rise to loss of sexual feeling. All these effects are central and the result of the direct action of the drug on the nerve cells. Bromides by lowering the activity of both motor and sensory cells are therefore valuable in controlling the cortical explosions of epilepsy and in the treatment of cerebral excitement of all kinds. They promote sleep by rendering the brain less sensitive to disturbing influences. When Bromides are given continuously /

continuously over a long period, or in large doses a toxic condition known as Bromism is set up. The chief symptoms of which are skin eruptions such as acne, pustules and small abscesses, digestive disturbances evidenced by foul tongue, foetid breath, nausea and vomiting, increased secretion from nose, cough and bronchial catarrh and conjunctivitis. All mental symptoms are exaggerated, such as sleepiness, mental dulness, general muscular weakness and reduction of sensibility throughout the body giving rise to unsteady gait and slurring speech. Bromides are excreted mainly by the urine and this begins a short time after administration and goes on for a long time, sometimes months. Bromides have a diuretic effect and the urine is increased in amount. Small quantities of Bromide are excreted by the skin, saliva, bronchial mucus and faeces.

There are several salts of Bromide in use, such as Potassium Bromide, Sodium Bromide, Ammonium Bromide and Strontium Bromide, but there is no doubt that Potassium Bromide is the most useful preparation and the one that is most commonly used. Bromides are largely used in epilepsy and their effect is to diminish the intensity of the fits and reduce their frequency. Bromide of Strontium is milder in its action and it is the Bromide Salt which is least likely /



likely to produce Bromism. On account of the depressing effect of Bromide of Potassium when given alone, it is frequently prescribed along with Ammonium Bromide and I find that usually the best results in treating epilepsy are obtained by combining the Bromide Salts.

In connection with the Bromide treatment of epilepsy, it is important to remember the TOULOUSE - RICHEL method of administering the Bromides, which consists in the removal of the Chloride Salts from the diet, and this can be readily done by removing common salt from the diet. By this means the excretion of Bromides is retarded and the tissues become consequently saturated with Bromides. To get the benefit of the Bromide treatment in epilepsy it is necessary to have the tissues thoroughly saturated with the drug, stopping short of Bromism. The Bromides cannot be considered as pure hypnotics and they often fail as sleep producers. They are also apt to induce such a degree of depression and confusion subsequently, to preclude their use for this purpose. They are however particularly safe and efficient sedatives and perhaps excepting Paraldehyde they are more frequently used either alone or in combination with other drugs than any other drug at our disposal.

In the excitement which accompanies mental diseases the cortical neurons are in a state of hyperactivity /

activity with lowered resistance and no drug known at present has greater effect in increasing the resistance of the neurons and diminishing their activity. The usual dose is 20 to 30 grs but this dose can readily be exceeded and the proper quantity should be determined by its effect and also by the constitution of the patient. The Bromides are excellent sedatives for use during the daytime and I have found it advantageous to supplement them by a dose of Chloral or other drug at bed time.

There is no form of mental disorder in which the Bromides may be termed as useless. They may be looked on as useful adjuvants to other sedatives and hypnotics. I have found the Bromides useful in all forms of mania, melancholia, general paralysis and all explosive forms of insanity and alcoholic insanity. They may be usefully combined with Chloral, Cannabis Indica, Opium, Sulphonal and Trional. I frequently give a dose of Paraldehyde at bed time and subsequently give a dose of Bromide, and this combination, I consider is the most satisfactory hypnotic in the acute insanities. The Paraldehyde takes effect almost immediately and when its action is exhausted the sleep continues by means of the Bromide. I have found 15 to 20 grs of Bromide combined with 10 grs of Sulphonal a most useful hypnotic and sedative in the /

the restlessness and sleeplessness of senile dementia.

BROMALIN is a comparatively new Bromine compound which possesses the special advantages of the Alkaline Bromides without their irritant effects, and in this way the eruptions of the skin and digestive troubles are averted. Bromalin is supposed to break up into active Bromine and Formaldehyde in the system. The usual dose is 10 to 30 grs. It is used in the same conditions in which the Bromides are prescribed and as it is less likely to set up symptoms of Bromism it is used instead of the Bromide Salts in the treatment of epilepsy. My experience with the drug has been disappointing and I cannot recommend its use as a substitute for the Bromide Salts.

BROMIPIN is another combination of Bromine mixed with oil of Sesame. A 10% solution is usually used and is given in daily doses of 15 to 40 grs in epilepsy. It is reported to be effective in reducing the severity and frequency of the seizures and it also benefits the mental state. De Moor claims a further advantage in the nutritive value of the oil which is easily digested. It may be given by rectum and if given in this way a single dose at bed time is considered best. It does not irritate the bowel in any way.

CANNABIS INDICA /

CANNABIS INDICA or Indian Hemp. This hypnotic and sedative drug produces its effect through changes which it brings about in the central nervous system inducing a mixture of stimulation and depression somewhat similar to that seen occasionally under Morphia. In full doses it produces an exhilaration of the mental condition in which vivid hallucinations occur. This is followed by numbness, spells of partial unconsciousness to surroundings, a prolongation of time, seconds seem hours, distances are exaggerated and an overpowering sensation of impending death. The preliminary stage of exaltation is usually short and soon passes into heaviness and drowsiness ending in sleep. It is a valuable hypnotic and sedative, as it induces quiet and refreshing sleep and it does not disturb digestion and its after effects are slight, but it has the great drawback that it is uncertain in its action owing to the varying strength of its preparations. It possesses a powerful diuretic effect. It is mild in effect and does not disturb bodily nutrition, as evidenced by the gradual gain in weight of those getting it. Cannabis Indica is frequently combined with Bromide of Potass and this combination is among the best sedatives which we possess. As a sedative and motor depressant I have found a mixture of tincture of Cannabis Indica in

20 to 30 min, doses combined with 30 grs of Bromide of Potassium useful in soothing ordinary attacks of excitement and in larger doses this combination has a wonderfully calmative effect in epileptic excitement and in all cases of brain excitement with periodicity of symptoms. I find this combination in large doses is the best sedative to use in chronic mania with impulsive and homicidal tendencies or when this is combined with delusional insanity of a persecutory nature.

When Cannabis Indica has been given continuously for a time, a feeling of timidity and distrust in their own powers is engendered, this moral effect is of importance as can be readily understood in those cases with tendencies to homicidal violence.

Another advantage in connection with the use of this drug in Asylum practice is that the patient can safely be employed at work while taking it as it does not disturb any of the bodily functions and it also improves the appetite.

I have also found it useful in the sleeplessness of senile mania and in general paralysis. Some authorities condemn its use in melancholia and especially if strong suicidal desires exist, but in my experience I have had good results from prescribing it /



it in cases of agitated melancholia. Cannabis Indica should be considered a most <sup>useful</sup> sedative in all chronic and incurable forms of insanity.

OPIUM may be still considered one of the best hypnotics and sedatives which we possess, but discrimination must be exercised in determining the cases in which it should be used. It is certainly most valuable in some forms of insanity, while in other forms it does harm and its administration in such cases is to be strongly condemned.

The continuous administration of Opium in slowly increasing doses relieves painful mental depression, and in such cases it does not usually disturb digestion, in fact the appetite increases with a corresponding increase in bodily weight, while sleep is improved. I have found it an extremely valuable remedy in some cases of melancholia, where the prominent symptoms are restlessness, mental disquiet, anxious fears and depressing delusions, and especially so if suicidal longings and impulses are present.

I find that the most suitable form to give this drug is as Liq. Opii. Sedativ. commencing with 5 mins. three times a day and increasing the dose to 20 or 30 mins. three times a day. It is better not to exceed 40 mins as a single dose. The idiosyncrasies of certain /

certain individuals and especially seniles to the action of the drug should be kept in view. The tolerance established for the drug in melancholia is marvelous, habit is seldom acquired and as improvement sets in it can be readily withdrawn without causing bad effects.

If it is found that Opium disturbs the digestion Morphia should be substituted in the form of Liq. Morph. Hydrochlor. Treatment by Opium should not be tried if kidney disease or albuminuria is present, and it should not be given if the digestive functions are out of order, or where there is a tendency to refuse food. I have frequently prescribed Opium with good results in senile melancholia and in the depression of climacteric insanity. It is not suitable for treating many cases of mania and in more than half the cases it is injurious as it merely produces a condition of stupor which is followed by an increase of excitement, as the sedative effect of the drug wears off. The digestive system is also apt to become disordered with loss of appetite, constipation and loss of body weight.

It should never be given in acute delirious mania, puerperal insanity and general paralysis. Drs. Weber, Graves and Griesinger strongly recommend Opium in all cases of confusional insanity as it allays the irritability /

irritability of the nervous system and induces sleep. Other authorities condemn its use in stuporose and anergic forms of insanity. I have found no good resulting in such cases from its use. Its chief objection being the constipation which it causes and thereby favouring the development of toxins in the alimentary canal. Opium has been recommended as a hypnotic in post apoplectic insanity, when other simpler remedies after trial prove to be of no avail. Opium should never be used as a sedative when there is cerebral excitement, as it is apt to diminish instead of increasing neuron resistance and physiologically it is contraindicated.

HYOSCYAMINE - This alkaloid given in doses of  $\frac{1}{120}$  to  $\frac{1}{40}$  grs, is a powerful sedative and motor depressant in all forms of excitement and is rapid in its action. It is a useful sedative in all forms of mania where there is excessive restlessness, noisiness, violence and motor impulsiveness. In the maniacal attacks associated with epilepsy, in chronic alcoholism and delusional insanity. I have found it of little use in cases of acute delirious mania, and it should not be given in melancholia. It is largely used in the treatment of the criminal type of insanity on account of the good moral effect its administration appears to /

to induce. It may be doubted whether the success of this drug is due to its moral effect or not. The fact remains that the most impulsive forms of insanity of this class are benefitted by its use and the chief factor in producing this effect may be the consciousness of the motor impotence which this drug induces. The chief disadvantages in its use are that it diminishes all the secretions except urine, and causes dryness of the mouth and throat, it impairs the appetite and digestion but it is claimed that its continued administration causes these disadvantages to disappear. It should not be given when vascular disease is present especially atheroma.

HYOSCINE or SCOPOLAMINE is a similar alkaloid to Hyoscyamine but is five times more powerful in its sedative action. It is the best pure motor depressant which we possess and its advantages are that there are no after effects produced. The usual dose is  $\frac{1}{150}$  to  $\frac{1}{80}$  grs. The Hydrobromide of Hyoscine is the usual preparation given. It should never be prescribed in doses beyond  $\frac{1}{80}$  gr. It may be given either in solution, pills, hypodermically or by instillation into the conjunctival sac. It is used in similar cases to those in which Hyoscyamine is used, but is seldom given except in cases of extreme excitement. It has a very depressant /

depressant action on the heart and during administration its action must be carefully watched.

I have found small doses useful in cases of confusional insanity in which there is extreme restlessness. It should never be given when heart disease or vascular disease is present. I have found the combination of  $\frac{1}{100}$  grs Hyoscine with  $\frac{1}{6}$  grs Morphia a most useful sedative in cases of extreme mania.

DUBOISINE - Sulphate of Duboisine is an alkaloid possessing powerful hypnotic and sedative effects and has been used with success in Asylums in this country and on the continent. It is usually given hypodermically in doses of  $\frac{1}{100}$  to  $\frac{1}{32}$  gr. After its administration a short period of excitement occurs and this is followed by drowsiness with calm passing into quiet sleep lasting from 4 to 10 hours. There is usually no recurrence of excitement when the patient is roused from sleep.

Like Hyoscine it has a powerful depressant action on the heart inducing a tendency to severe fainting attacks and in consequence it is not suited for continuous administration. Ataxia and hallucinations of hearing and sight are also developed, and it causes a rather rapid loss in body weight. It has been used advantageously in the cases of mania in which Hyoscine has /



has been used but it has the advantage over Hyoscine or Hyoscyamine in that the quiescent period produced is of longer duration and that there is less prostration during or after its use. I have used it with marked success in occasional cases of chronic mania with delusions and hallucinations, in which outbursts of extremely troublesome and dangerous excitement were prone to occur. A single dose in such a case has been known to produce quietness for a period of six weeks afterwards. It should only be used in physically healthy patients never in those whose constitutions are in any way debilitated. It is not suited for treating cases of acute mania and it should never be used in melancholia. In acute mania although single doses produce quiet for a time it seems to cause more excitement subsequently. In the occasional outbursts of extreme excitement in cases of general paralysis, its quietening effect is most useful, but there is a danger of all the evils produced by the drug acting on a debilitated constitution.

The modern method of treating all forms of mental disease is opposed to the extensive use of hypnotic and sedative drugs and few cases of mental disease should be treated by drugs alone. They are however useful as a part of the treatment and must be used with discretion /

discretion along with the other methods at our disposal. Fresh air, rest in bed, baths and moderate physical exercise in some suitable cases are now well known by experienced physicians to be the most useful soothing agents to be adopted. It is generally admitted that the employment of drugs for their sedative effect is open to very great abuse and their effects should always be supervised by medical men and never left to be administered to a patient by a nurse or those in attendance. They should never be administered in increasing doses with the object of completely controlling all signs of excitement, but should be used merely to reduce the excitement to within manageable or safe limits thus preventing exhaustion, and they should only be administered for short periods at a time to produce this effect. It should be remembered that the majority of sedative drugs produce functional troubles by their effects on other organs, than the cerebral cells, and the soothing effect of the drug may be out of proportion to the harm done to these organs.

In prescribing a sedative therefore we should consider whether the drug is disordering any of the other bodily functions, and if so, is the patient's mental state improving so much as to justify this. A good standard as to the effect of a drug in this way is the body weight, and if the patient steadily loses/

loses weight while undergoing treatment by a sedative, the drug should be abandoned.

We have not yet discovered the perfect hypnotic and sedative, which should increase the appetite and body weight, and should be otherwise harmless, rapid and certain in its action, and easily administered. The insomnia occurring in mental diseases as in other cases, should be treated according to the cause.

The insomnia which is so frequently such a prominent symptom in senile cases is largely due to arterial sclerosis and as alcohol dilates the arteries of the cerebral cortex, as well as the peripheral vessels, it is most useful in diminishing restlessness and inducing sleep. I have repeatedly found that alcohol in the shape of a little hot whisky toddy is a most efficient sleep producer in such cases, and it should always be tried before resorting to drugs.

It is now generally admitted that all acute insanities are directly due to a toxæmia, and this toxæmia may either act directly on the cortical gray matter of the brain or may indirectly disorder it by producing physical changes elsewhere, which of themselves are capable of preventing sleep. The outward manifestations of these are a high arterial tension and a rapid pulse rate. Thus by using drugs which reduce /

reduce arterial tension, sleep is frequently induced, and in this way in acute melancholia which is always accompanied by high tension nitrites such as Erythrol-Tetra-Nitrate in  $\frac{1}{2}$  to 1 grain doses are most beneficial.

There may always be a doubt about giving hypnotics and sedatives to recent and acute cases, but there should be none in these cases where recovery cannot be looked for or where such cases are incurable from the first.

In prescribing drugs in the treatment of mental diseases, the first and most important point to be decided on is whether the patient requires a pure hypnotic, a general sedative or a motor depressant. If a hypnotic is required, find out the drug most suited for the patient's condition and prescribe a full dose of it, carefully watching its effect, and it is advisable to use it intermittently.

The administration of the drug should be stopped as soon as possible to see how the patient gets on without it. Hypnotics should never be used during the day with the idea of obtaining quiet. Sedatives require to be used experimentally at first in small doses until the patient's peculiarities in the way of idiosyncrasies are known. They should seldom be pushed /



pushed and only used to take the edge off his excitement and make him more manageable, at the same time preventing exhaustion and injury to himself and others.

Their continuous administration is to be condemned. Frequently it will be found advantageous to use sedatives in combination with one another and although in some cases a certain sedative seems to do well to the exclusion of the trial of others, it is to be recommended to change the drug from time to time.

Some of the more powerfully acting sedatives and motor depressants should only be administered in extreme cases and under no circumstances should these be used for continuous treatment.



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