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A CLINICAL RESEARCH ON THE NEWER HYPNOTICS  
AND THEIR USE IN MENTAL DISEASE..

by

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## INTRODUCTION.

As with many other groups of drugs the ranks of the hypnotics are continually being swelled by the addition of so-called sleep producers. Many hypnotics and analgesics are carbon compounds and by altering their chemical composition it is easy to produce new or rather modified forms of known drugs, with the same properties and then by judicious trade booming almost to convince the Profession that a wonderful new discovery has been made and that never before could it command the use of a remedy so certain in its action and so free from injurious after effects.

To the ordinary practitioner there is really a maze of hypnotics and he is very apt to pay no attention to any of them when the occasion arises and to stick to the few which were described to him at his medical school or used by his teachers at hospital and that with varying results satisfactory and unsatisfactory.

Some of these newer hypnotics are really of much use and this can be demonstrated by clinical trial. I intend to give the results of my investigation of a few of these with an attempt to appreciate their value.

In the case of the insane there is perhaps a larger/

larger field for gaining experience in the use of sleep producing drugs than elsewhere and although not giving up all my time to insanity I have for the time being and for the past two years had the opportunity of observing the effects of drugs on the insane as well as on the sane.

That the action of drugs is modified by the mental state is a well recognised fact or at any rate it ought to be. This is only a part of the larger subject that drugs have a modified action when applied to diseased conditions from their normal physiological action on the healthy body.

Thus mercury is tolerated by the syphilitic who is in need of it in doses which would make the ordinary individual very ill indeed. In fact it is stated that if a patient stands large doses of mercury without showing its toxic effects that in all probability he is the subject of syphilis. So sulphonal to the patient whose condition is crying out for it can be taken in quantities which would poison a healthy individual. To quote yet another example. It is occasionally necessary to administer croton oil to the insane and I have personally not once but several times known six minims of this drastic purgative cause only one comfortable evacuation of the bowels/

bowels in twenty four hours and thereafter have apparently no effect.

I would therefore make it plain that I am dealing with hypnotics in connection with mental disease and that the record I propose to give as to the scope and indications for the various hypnotics is as I have used them in such cases.

The group of hypnotics or sleep producers in the broadest sense of the word includes many practices and methods besides the actual drugs, and it is highly important that this should never be lost sight of. Drugs really should only be resorted to when we can find no other means of inducing sleep or to tide over the time when we are searching for that other means and so to prevent undue exhaustion of the patient.

These other practices and methods are so often neglected by the doctor that the discussion of a few of them should prove useful.

When a patient cannot sleep there is very often and far oftener than most people suspect some source of irritation so that the removal of such a source of irritation becomes a highly important matter. It may take a long time to discover this irritant especially with patients who are unable intelligently to discuss their symptoms or indeed anything at all. But time spent/



spent in so doing will be amply repaid if in the end we can lay our finger on the cause of the sleeplessness and remove it once and for all.

The patient may have some wrong idea in his head, for instance he may believe that the water taps have been left running and that he is to be drowned, or that the gas has not been properly turned off and he is to be suffocated, or that some friend has called and is waiting downstairs to see him, or indeed any other idea which if the facts were true would prevent an ordinary individual from going peacefully to sleep.

This can generally be put right by going oneself to see that things are right and reassuring the patient or by actually taking the patient to see for himself that there is no cause for anxiety. Decayed teeth or rotten stumps by setting up neuralgia may prevent sleep and the patient may say that he is being tortured by electricity or by some unseen agency. The removal of the teeth or stumps would then cause the turning off of the electric current or finally put a stop to the nefarious work of the unseen agency and allow the sufferer to sleep. I had a man under my care who was always creating a disturbance at nights and who made a noise as a matter of course and could not be prevented from disturbing others until during an ordinary routine physical examination it was discovered that his sciatic nerve on one side between the great trochanter and the tuberosity was almost exquisitely tender/

tender and now the noise is not nearly so bad or so frequent.

A patient who cannot or seemingly will not go to sleep may easily be hungry and yet not recognise that he is hungry or rather not be able to explain to others that he is hungry. But if it is discovered that a crust of bread or a biscuit proves a valuable hypnotic this must not cause too much surprise and should be noted for future guidance both in this and possibly also in other cases.

And now we come to one of the most important if not the most important sleep producer and it is simply healthy occupation in the open air for as many of the waking hours as is possible. This should never be neglected if the state of bodily health renders it at all possible to employ the patient out of doors. It is perhaps the most generally applicable and the most easily applicable of all hypnotics. Interest in gardening or farming in certain types of individuals is often entirely lacking but it can often be created say by a special piece of work such as a special plot to look after - one of our patients planted a large area with potatoes and was well mentally while he was doing it, possibly just from the grand sleep he got at night - or a special lot of hens that are the patient's/

patient's care and his alone. After all, the tilling of the soil and the looking after of beasts are occupations which all our forebears have had to do although some more lately than others, so that surely even the schoolteacher, the clerk, the scientist, or the wastrel with perseverance can be brought to do their daily task in the garden, which task will earn for them their smoke and other little rewards.

I have repeatedly seen the man who would not work, who was a nuisance during the day and a worse nuisance at nights, suddenly for some reason or for no apparent reason at all start to work and work well and become a most useful member and a most happy member of the community, pleasant to talk to and agreeing well with other inmates, the very reverse of his former attitude.

On one occasion I pulled a pipe out of my pocket when searching for something else and one of these patients who had been idle and surly for months, flabby and not sleeping, remarked that he wished he had a nice wooden pipe like that. Now he has got one and all his troubles as well as our troubles so far as he is concerned seem to be at an end, and he is one of the best and most patient workers in the field, eating like a horse and sleeping the sleep of the just.

I would just mention colour treatment, the papering of rooms and the colouring of the glass of windows. I have never seen it tried or tried it myself and have not read much about it so that I may dismiss the subject at once.

A bath at the temperature of the body, that is not a hot bath - for the two are often confused is a very effective means of quieting a patient and eventually making him sleep.

It may have to be kept up for hours but the patients seem to enjoy it and do not give much trouble as a rule while they are in the bath. It is said that a bath at the body temperature raises the blood pressure and acts generally as a tonic, as opposed to the real hot bath which if too often repeated or of too long duration will cause a slack tired feeling in any one as most of us could confirm from experience of a personal nature.

Another aid to sleep and perhaps a direct cause of it and a more direct cause than many are prepared to admit is general hygienic and tonic treatment. This consists of good plain food in plenty, fresh air both in living and sleeping rooms; suitable clothing, suitable bedding, also pleasing and comfortable surroundings. In the sleeping room that device where  
by/



by a false sill is introduced so that the window can never be closed will be found of service.

Tonic drugs given at intervals to tone up the digestive and nervous systems should not be lacking. Lauder Brunton quotes a case of that kind of sleeplessness which is due to over-tiredness where the giving of a small dose of *nux vomica* restored the state to that of ordinary tiredness and sleep was the result. Even the placebo which makes the patient feel that something is being done for him and that he ought to be improving has its use. A good example of this came under my notice recently when a poor slightly built man of 28 or 29 years of age saw an advertisement of some proprietary preparation called "parmint". He drew attention to the paragraph and said that it exactly described his symptoms. He was supplied with a bottle containing a little salt, some pink colouring matter, some essence of peppermint and water and the result was little short of a miracle. He began to put on weight. He slept much better at nights. He employed himself more usefully during the day and has continued to do so even after the mixture was stopped so that we know what will probably work a cure should he get into the same frame of mind again.

From the study of the question as set forth in the literature on the subject the employment of female nurses/



nurses seems to be of use in quieting insane patients. It is stated that there<sup>is</sup> appreciably less noise and shouting where they are employed and that consequently a greater number of patients get a good and undisturbed night's rest who otherwise would have been wakened by the noisy ones and add their quota to the din and so waken others who ordinarily would sleep the whole night through. It seems reasonable that the presence of a female of the species, should make the males at least behave as well as they are able whether to gain favour in her eyes or not to appear ridiculous it would seem hard to say.

It is perhaps not out of place to say here that drugs in combination undoubtedly give better results in many cases than larger doses of a single drug and also that proportionately much smaller doses are required. In his "Actions of Medicines" Lauder Brunton quotes the case of an animal on which he was going to perform an experiment before a class of students. He had given it a dose of laudanum into one of its veins and the effect had been to make it very restless and noisy. As the hour of the demonstration drew near it was still not anaesthetised and by chance he gave a small quantity of chloral and almost instantaneously the animal ceased to struggle and make a noise and then went quietly to sleep.

At/

At present I have three men all noisy demented, or at least they were noisy, on bromide of potash three times a day, and two doses, one last thing at night of sulphonal seven grains. This sulphonal was changed recently to five grains of veronal in the same way the bromide being given as before. There has been no report of noise since the first dose which may be a coincidence but it is surely not a coincidence that now for over a fortnight there has not been any noise at nights where as before the quiet night was the exception.

It is important to change the drug from time to time, also I think to discontinue it altogether at intervals although the administration can cover months with no harmful effects. These three cases are distinctly looking better during the day than they were before getting the hypnotic. I read of one case where a man had been accustomed for years while outside an institution to take ten grains of sulphonal daily and who on admission was suddenly deprived of the drug and within twenty four hours was chattering like a monkey in a strong room with the chamber pot on his head.

Such a case should be a warning not to allow the patient to become accustomed to any one drug so that he/

he forms a so called drug habit.

Speaking generally it is best not to pin our faith to any one method of securing sleep, but to use several of the means in our power. A combination of removal of any discovered source of irritation - a healthy open air life with a sufficiency of manual labour and drugs when necessary should be a sort of routine which is varied to suit individual requirements. It should I think always be recognised that drugs are an evil but that they may very often be the lesser evil and then it is wise to make use of them. On the other hand if the Toxic theory of Insanity, which is becoming more and more accepted, be believed then on scientific grounds, we ought during certain phases to introduce something into the circulation to counteract the toxins of the diseases which are already circulating there. The efficient movement of the bowels is always attended to in insane patients but if we are giving drugs for the production of sleep, it is well to make a special point of seeing that the bowels are evacuated regularly and satisfactorily. It should be a routine to give the patient a brisk purgative before starting a course of hypnotics and also from time to time during their exhibition so that we can be satisfied that nothing is being stored up so as to accumulate/

accumulate in the body and produce harmful results. Careful observation of the general behaviour of the patient, his taking of food and using it, of his appearance, should warn us if any drug is not proving a benefit.

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II. INSOMNIA AND ITS CAUSES WITH SPECIAL REFERENCE TO  
MENTAL CONDITIONS.

Sleep is an essential phase in our daily life and some of the 24 hours more or less must be passed in sleep or all is not well with us. The exact proportion of the day which is given up to sleep varies in different individuals and also in the same individual at different seasons and different ages. Some probably from habit can do with a great deal less sleep than others and apparently are none the worse of their abstinence. Sir Walter Scott used to say of himself that he was not half a man unless he had eight hours of oblivion and a popular saying has it, seven hours for a man, eight for a woman and nine for a fool.

If there is any truth in the latter then circumstances certainly alter cases and the person who is working hard in the open air will put in more sleep than the brain worker, although many brain workers can sleep eight or nine hours without any difficulty and better work is the result of it. It is to be remembered that the same waste product is produced whether the work done be mental or physical.

Still however the main fact remains that sleep we must if we are to live. In many pathological states/



states such as the exanthemata: it is often a sign that the patient has started on the road to get well when he has his first good sound natural sleep, and the same thing holds in insanity, a good sleep whether by natural or artificial means is often the prelude to a better phase in the patient's condition if not to actual recovery.

The Chinese who were artists in devising the most diabolical tortures as punishments used to kill by preventing the victim from going to sleep, and it is said that in fourteen days a previously healthy man could be dispatched by this method.

One of the oldest theories regarding sleep is that of Mayow who held that it was governed by the action of the "vital spirits" and that when they took up their abode in the head the individual could not sleep but that when they left the head and went elsewhere in the body, sleep was possible.

He said that after a good meal all the vital spirits descended to the abdomen to superintend digestion and consequently the individual felt sleepy and if not prevented went to sleep. Even now if we substitute the word blood for vital spirits the theory will bear the light of modern ideas on the subject fairly well. It is well recognised that anaemia

of/

of the brain is a condition favourable for sleep.

Another theory is that all the neurones in the body become linked up together and that from want of external stimulus sleep is produced. Again the products of fatigue for example sarcolactic acid circulating in the blood are said to intoxicate the higher centres and to produce sleep, and we know that by washing away these products of fatigue, an animal can be made to work until it drops dead.

Yet again it is said that it is the lack of oxygen and the excess of carbon dioxide that brings about the state of sleep, and the example is quoted of the dog or cat which roll themselves into a ball and bury their noses amongst their fur, thus bringing about a lack of oxygen and a superabundance of carbon dioxide.

Absence of distracting stimuli is conducive to sleep and it is a matter of common knowledge that one goes to sleep more easily when all is quiet and it is quite dark, and also when the mind can be made a blank. And yet it was possible to go to sleep at one time in a busy aid post with a battery firing in the back garden. So that there must be other factors besides the absence of external stimuli.

Perhaps one of the best ideas is that natural sleep/

sleep is the result of the instinct periodically to put ourselves in the most favourable position for its production.

In order to go to sleep, we lie down with our heads raised on a pillow. We make ourselves comfortably warm and probably sleep from a kind of autosuggestion although it is said that the idea that someone else is going to sleep is even more powerful.

Certainly with young children this seems to be the case. Tell the child that its doll and teddy bear and all the other playthings are away to sleep, repeat this in a low voice several times and very soon the child drops off to sleep. If there is not some potent reason why it should remain awake such as discomfort from its night attire, a pin sticking into its skin, cold feet or a wet bed, to mention only a few of the many things that may prevent a child from sleeping.

During sleep the chromatoplasm of the nerve cells reaccumulates. It is also said that the urine of a tired sleeping man has a soporific effect and when he is refreshed and about to waken up, a stimulating effect producing tetanus for instance when injected into a frog. It seems also that at the various synapses in the cord and brain processes called gemmules are protruded/

protruded and link up with the gemmules of other cells and that when a sufficient number of these junctions are complete the individual goes to sleep.

There are then two ways of making a person go to sleep under ordinary circumstances and also in many diseased conditions as well. The first being to lessen the amount of blood flowing to the brain and the second to diminish to activity of the brain cells themselves.

The first may be attained by applying warmth to the feet and to the abdomen, but not to such an extent as to increase the heart's action. That is to say a small amount of warm whisky in a man's stomach may have the effect of sending him to sleep. Whereas a larger amount may by stimulating the heart to increased action produce exactly the opposite effect.

An individual may be so wanting in vascular tone as for example in the anaemia so common in young servant girls, that during the day in the erect position all the blood gravitates to the lower parts of the body and away from the brain and she falls asleep standing up on her feet or sitting up in a chair. At night on the other hand when the lying position is assumed there is a rush of blood to the head, and she cannot go to sleep. Such a condition may be overcome by general tonics or in anaemia by iron.



A general tonic will also often overcome that want of sleep or rather inability to go to sleep, which is due to over tiredness, a condition which almost every one must have experienced at some time or other. The condition may be the result of study, burning the candle at both ends over a prolonged period or it may be the result of a single great exertion such as playing a rugby match or a tennis match when not in training or doing a whole days shooting, including walking up game in turnips when one has not been accustomed to that special form of exertion. I have seen one first round at golf after a few months away from the links produce such a condition.

Tiredness is present without a doubt and we think that we have only to lie down to sleep the sleep of the weary but we are over tired and sleep will not come. Here the treatment for the first mentioned overtiredness is to have a general tonic to bring about an ordinary tiredness and sleep. And in the second the judicious man will take a glass of hot whisky before going to bed and the result will be ordinary tiredness and sleep. In other words a strychnine tonic for the overworked brain and a hot toddy for the overworked body. Insomnia is classified in various ways by different authors but simply and/



and I think well as of four kinds. I. Irritative. II. Toxic. III. Psychological. IV. Change in habits of life. The third form is of course the one which I would chiefly consider, but as all the other forms may be found in the insane it may not be amiss to define them.

The irritative form, where there is pain, neuralgia bellyache etc., and where if the pain continues nothing will permit of sleep. Where in fact the cause of the pain must be removed or as it is a temporary cause put out of action for a while is quite common and it a wise man who always knows when it is safe to give morphia and when an operation is necessary.

The toxic form is got in pneumonia, brights disease or the infective fevers and is of course quite as frequent in the insane as in other people. Here a sleeping draught works wonders. That form which is due to a change in the habits of life may also be met by a sleeping draught given to re-establish the sleep habit and then to be discontinued.

It is natural for an individual not to be able to sleep if it is not his accustomed time for sleeping as for him not to be able to evacuate his lower bowel if it is not his usual time for doing so. Of course there are individuals who can sleep at any time and in/

in any place and also who can defaecate at any time without experiencing any difficulty. These are to be envied and it is to be noted that they will not seek advice on the subject. It is said \*\*\*\* of the great Napoleon that he could lie down anywhere at any time and snatch a few hours or a few minutes sleep, so that he appeared never to rest.

There cannot be any doubt that habit where sleep is concerned is of vast importance and that the use of such drugs as paraldehyde may re-establish a habit which has been disturbed. The drug can be stopped after the habit is reformed and sleep becomes quite natural again.

One has only got to look into one's own private daily life to see what an important part habit plays, and in fact it is probable that the greater part of our lives is ruled by habit and that given a thorough knowledge of any individual, one could state with a fair degree of accuracy what his action would be under certain given circumstances.

The subject then of habit if it is so important when dealing with the sane is doubly or trebly important when we have to do with the insane.

It is truly remarkable how demented patients with all sorts of filthy and unsocial habits can be re-educated so that they become more or less respectable members of the community and even can be sent away from the/  
the/

the Mental Hospital and trusted to behave themselves and observe the rules of common decency.

In my opinion exactly the same applies when sleep is the desired object and very many patients can be educated to go to sleep at the proper time and to sleep for the proper length of time. This is generally managed by a course of drugs which is continued and discontinued at intervals until it is discontinued altogether when the sleep habit is thoroughly established.

It is generally easy by prompt treatment of a lapse to set things right again, of course one must take care that the lapse has not spread over several days before one is informed of it.

It is generally admitted that good habits seem to be much more easily broken than bad ones, and it is worth while to look on good habits as one would look on hot house plants and preserve them with a little more than ordinary care.

Turning now to Psychological Insomnia it will at once be recognised that there are several variations of this and also as before mentioned that the insane suffer from many of the same forms of insomnia that ordinary individuals suffer from.

It is always well in the first instance to ask oneself if this particular insomnia would probably exist/

exist if the patient were sane, and if so how would we deal with it in a sane patient and to try that method before coming to the conclusion that the insanity is the dominating feature of the case. There are however some varieties which stand out distinctly as insomnias of the insane and perhaps the most distressing of all is the sleeplessness of acute mania and acute melancholia.

No one who has had anything to do with those types but recognises the necessity of procuring sleep first for the patient's sake and thereafter for the sake of everyone who has anything to do with him. Secondly there is the insomnia of Dementia Praecox and of mild mania and melancholia, this form although not of the same urgent nature and permitting of a certain amount of temporising, in many cases has to be taken in hand and sleep obtained for the sufferer by artificial means.

Thirdly there is the insomnia due to cerebral atrophy and arterio sclerosis where there is dilatation of the perivascular spaces, increased growth of glia and pigmentation of the ganglion cells with perhaps areas of brain softening. These are more approximate to some of the cases met with in ordinary practice where the cause of the condition can be definitely/



definitely set down as due to the state of the vessel walls.

Now while these three groups are perhaps the main ones for consideration it will be recognised that there are many other types of cases that do not sleep at intervals although generally sleeping quite well. Patients who have delusions and hallucinations are very often bad sleepers and no wonder.

If a patient thinks at night that there are people lurking near to do him harm, he would hardly be expected to go to sleep. If a patient actually sees his enemies coming into his room and preparing to assassinate him it would be surprising and little short of a miracle if he did sleep.

If a patient hears voices whispering at his room door or as often happens under the floor of his room and voices which are insulting, threatening and abusive, he cannot sleep.

In one case a woman regularly every night and for long periods heard men under her bedroom floor. They gained access to her room by a trap door - which by the way she never would point out in the day time but just accepted it as a fact and expected me to do the same - and to use her own words "treated her in a way that no decent married woman could tolerate."

She had long periods of insomnia and was at times very/



very noisy.

There is a class of demented who either before going to sleep have a bout of noise or who waken up during the night and create a din for an hour or so for apparently no reason and then fall asleep again. This class is most troublesome and it is in these cases particularly that I think a sleep habit can be attained by the use of drugs. These patients are most obnoxious because they waken and irritate patients who otherwise would give no trouble and they are well worth attention.

There is also a class of patients who at night get erroneous ideas into their heads and cannot sleep for thinking. A little discussion of their problems will often send them to sleep quite contented. Many sane people are prevented from going to sleep for the same reason although ideas are perhaps of a different and more sensible nature. Was the front door locked? Were the windows on the ground floor snibbed? Was anything inflammable left near the dying out fire? Was the gas properly turned off? These and a hundred other ideas might prevent sleep. Another type of thought which may prevent sleep is the endeavour to recollect, say the name of a character in a novel, and the only cure may be to go downstairs to find out. A great and absorbing interest in anything/

anything business, a hobby, or an invention may quite prevent natural sleep.

CLASSIFICATION OF HYPNOTIC DRUGS AND  
THEIR MODE OF ACTION.

Although it is only proposed to discuss practically a few of the many hypnotic drugs at our disposal still it is well to pretty fully review the group and to recapitulate what is known of the mode of action and the efficiency of the various compounds. The following classification comprehensive as it is, does not pretend to be exhaustive.

A The alcohol group.

(a) The alcohols. Ethyl Alcohol and Amylene Hydrate. (b) The Sulphones. Sulphonal trional and tetronal. (c) Urea derivations proponal.

B The Chloral group.

Chloral Hydrate. Chloralamide. Chloralose Hypnal. Isopral. Chloretone. Bromural Brometone.

C The Paraldehyde group.

Paraldehyde. Hypnone.

D Veronal.

E The Bromides.

F Opium and its alkaloid.

G Hyoscine Hydrobromide.

Ethyl Alcohol is official 99% by volume and is known as absolute alcohol as also is Rectified Spirit 90% known/

known as Spiritis Vini and the various dilutions to 70 60 45 20%. The physiological action of Ethyl Alcohol is narcotic and antipyretic and not stimulant. It is useful in old age, overwork and fatigue. It is also a soporific in fever. A night cap of whisky is really soporific because of its action on the higher centres.

**Amylene Hydrate** di methyl ethyl carbinol tertiary amyloalcohol is not official. It is given in doses of from 30 to 80 minims and is usually flavoured with liquorice.

It is a colourless liquid with a pungent taste and odour. It is soluble 1:8 in water and also in alcohol. It is also obtained in capsules each containing 10<sub>m</sub>. Its hypnotic action is somewhere between chloral and paraldehyde. It is said to be certain in action and quite free from any danger. It is more rapid than paraldehyde and its effects last longer from 6-8 hours. A drachm and a half in an ounce of water is usually a sufficient dose and two drachms is often too much.

Sulphonal is official. Its solubility is 1:450 in water or 1:360 in water at 25° C. It is soluble 1:8 in alcohol and freely in hot alcohol. The dose is 10-30 grains in cachets or suspended in a mucilage.

If/



If administered in powder form it should be very finely pulverised and should be followed a hot draught.

Unless in solution it should be given from one to four hours before sleep is desired. It is of no use where there is pain. It does not affect digestion, pulse or temperature. It does not depress the heart and is given in the same class of case as chloral; 30 grains in an ounce of brandy and two ounces of boiling water is a useful prescription. It rarely leads to a habit or indeed any bad after effects.

It may not act for three or four nights and produce meanwhile some degree of irritability. One author describes sulphonal as the only mental sedative that we have, and says that with the bowels acting freely forty grams of sulphonal can be given safely twice in 24 hours, and six hours later followed by 20 grains gradually decreasing the dosage.

Sulphonal is also a motor depressant and can be given during the day. It is given in motor excitement, restlessness, and noisiness, and also to tide over expected acute attacks. Here it is often combined with bromide say ten to fifteen grains of sulphonal twice daily with fifteen grains of bromide. It is well to interrupt its administration for a day or two each week.

Sulphonal/

Sulphonal is contraindicated with a thready pulse, a foul tongue or disturbance of equilibration.

It often fails in dangerous mania and at times produces haematoporphyrinuria which latter has been the great objection to the drug. Lately this has not been nearly so much in evidence and with the bowels and kidneys acting well the danger seems to be very remote and perhaps even to have been exaggerated.

Trional methyl sulphonal is official. The dose is from 10-30 grains and is given in a large cup of hot liquid. It is soluble 1:420 in water. Its hypnotic powers are somewhere between those of sulphonal and tetronal. It is said to be of use in neurasthenia and organic brain disease and it is of no use at all where there is pain. Trional has been somewhat brought into disrepute by the researches of Soukanoff who found that in animals it was the most effective drug for bringing about neuronal degeneration. For this reason some authorities rule it out altogether as a hypnotic.

Tetronal the dose is from 10-20 grains and its action is like that of sulphonal or trional, only it produces its effects more rapidly. Most of the facts under sulphonal and trional would also apply to tetronal.

Propional the dose is 2 to 8 grains, it is a homologue

of/

of veronal. It is soluble in alkali and therefore acts when it reaches the intestine. It requires care as while 5 or 6 grains may be hypnotic,  $7\frac{1}{2}$  grains may be actually toxic.

Chloral Hydrate Trichlor ethylidene Glycol is official and the dose is from 5 to 20 grains. It is given in aqueous solution or in chloroform water well diluted. It is easily soluble in water, alcohol, glycerine, oils and fats. It is very often combined with an opiate or with one or more of the bromides. It is incompatible with quinine.

It is contraindicated in heart disease or in Bright's Disease where the vital force is weak.

It is a good rapid hypnotic with no evil after effects.

It is only given in depressed cases as it increases motor excitement.

One authority has given twenty grains three times a day for a prolonged period in a case of advanced fatty heart disease and with no bad effects.

Chloralamide Chloral formamide is official in the United States. The dose is from 15 to 45 grains and it is given in a weak spirituous or acid solution, a maximum single dose is 60 grains. It is soluble 1:20 in water and 1:2 in alcohol. It is incompatible with alkali and acts when given as an enema.

It/

It is useful in alcoholism, neuralgia and hysteria also in heart disease.

It is stated to be useless in the treatment of the insane but otherwise to be an excellent hypnotic with no bad effects and not requiring an increased dosage if it is to continue effective.

Chloralose: dose is 3 to 10 grains in a cachet. It is only slightly soluble in water. It is like chloral but reputed to be less depressant to the heart and also to be of great use in the treatment of the insane.

Hypnal: dose 15 grains in a cachet. It is chloral hydrate combined with antipyrine and is said to be indicated where pain is a factor.

Isopral: dose 10 to 15 grains but in mania and paralytic excitement from 20 to 45 grains. It is only slightly soluble in water and is said to be not so poisonous as chloral. On the other hand it is described as dangerous and as acting rapidly on the heart.

It is caustic and therefore contraindicated in gastric ulcer.

One authority gives 20 to 30 grains as a hypnotic and motor sedative and says that it has no ill effects. It is best administered in jam.

Chloretone: dose is 5-20 grains in each cachet or tablet/



tablet or capsule. It is followed by a glass of water or milk or given suspended <sup>or</sup> in a cachet or tablet. Solubility is 1:200 in water, 1:10 in glycerine, 1:50 in liquid paraffin, 1:12 in olive oil. It must be given with care as it may accumulate and on a solvent being taken it may be absorbed in large quantities. It is useful in acute mania, periodic mania, senile dementia, general paralysis and alcoholism. It is also of use in sleeplessness due to pain in cancer and tabes.

Bromural or bromisyl valerianyl urea, dose from 5 to 10 grains. It is soluble but with difficulty, in water. It induces sleep in from 5-25 minutes, and a sleep which lasts from 4 to 5 hours, and is then followed by natural sleep. It is an excellent hypnotic with no depressing after effects.

Brometone Tribrom tertiary butyl alcohol; dose is 5 grains repeated two or three times in twenty four hours. It is 77% bromide.

Paraldehyde: It is official in the United States. The dose is from half to two drachms and this can be repeated in half an hour if necessary. It is soluble 1:10 in water and easily in alcohol. It is best administered in liquid extract of liquorice. It acts like chloral but does not depress the heart. It produces its effects rapidly in about 15 minutes.  
It/

It is a powerful hypnotic with no after effects. It will produce quiet in mania, and sleep in melancholia. The sleep it causes is followed by a natural sleep: For re-establishing the sleep habit it has few rivals. There is no craving for the drug when its administration is stopped. Its action is on the highest cortical cells. In mania it is usually combined with bromide and it may be given by the rectum. Large doses of 3, 4, or 6, drachms have been given in the confirmed insomnia of melancholia and excited mania.

Its action is somewhere between that of ether and alcohol, but it is more hypnotic than either of those drugs. It is not given during the day. One authority gave  $8\text{ } \int$  every four hours till sleep was induced.

Hypnone: is given in doses of from  $1\frac{1}{2}$  to 5 minims in almond emulsion or mucilage or syrup. Capsules with  $\frac{3}{4}\text{ m}$  can be obtained. It is insoluble in water, but soluble in alcohol or oil. Great care is advised in its exhibition.

Veronal: is official as Barbitone and is also known as hypnogen and malonurea. The dose is from 5 to 10 grains, a maximum single dose is 12 grains and this can be given twice in 24 hours. During its administration the bowels should be acting freely and the kidneys/

kidneys also acting well. 5 grains should be sufficient for an ordinary case of insomnia. It is soluble 1:145 in water at 20°C, 1:9 in 90% alcohol.

It is indicated in nervous restless insomnia and depression also for mania and cardiac cases. It may produce an erythema. It gives sleep without subsequent depression. It is specially useful for those patients who do not sleep long enough. 7 or 8 grains will give an extra two hours of sleep. If there is no natural sleep 14 or 15 grains may be given but this quantity will probably cause sickness when the sleep is over. Veronal should always be given \*\*\* followed by a hot drink.

It is to be noticed that the action may be deferred in some cases.

The Bromides of Potassium Sodium and ammonium are given in doses of from 5 to 20 grains. They are all freely soluble in water. They are powerful depressors of the nervous system and considerably diminish reflex excitability of the cord. They are also said to depress the peripheral nerves. For these reasons they are powerful hypnotics. They are largely used in the treatment of epilepsy and as hypnotics when they are very often combined with chloral. The sleep produced is quiet and refreshing. While these are/

are the generally accepted views as to the properties and action of the bromides, one authority denies that they are hypnotic at all, and says that they are only analgesic. He groups them with opium and its derivatives which are also said not to be hypnotic.

A combination of the bromide and cannabis indica is a good sedative and motor depressant, and does not affect the nutrition given over prolonged periods. It diminishes reflex irritability to a marked degree.

Opium with its alkaloid morphia is doubtless useful in cases of mental disease and while its prominent action in sleeplessness is to remove the pain which is preventing sleep, still it has been used with much success especially in melancholia and agitated melancholia.

Opium is described by one of the best known authorities on mental disease as one of the best hypnotics that we possess: Its constipating action is of course a draw back especially where constipation is already a marked feature of the disease but in spite of all, I am inclined to think that we would be very much the poorer and the losers is we were deprived of opium and its derivatives in asylum practice.

Hyoscine Hydrobromide or Scopolamine dose  $\frac{1}{400}$  to  $\frac{1}{300}$  of a grain but as with other drugs in mental disease the dose has got to be increased and  $\frac{1}{50}$  or even  $\frac{1}{25}$  of



a grain has been given hypodermically and repeated in a few hours, usually however in a lesser dose.

It is a pure motor depressant and a great standby in acute mania and delirious mania.

It is useful in noisy demented  $\frac{1}{100}$  of a grain given combined with  $\frac{1}{6}$  of morphia.

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LIST OF DRUGS USED WITH CLINICAL NOTES ON CASES.

The following drugs were selected for trial, the bromides with Chloral and with Veronal Trional and Sulphonal. Paraldehyde and Amylene Hydrate, Sulphonal, Hyoscine Hydrobromide with Morphia, also Chloretone, Chloralamide and Bromural, and I will now give detailed account of the effects of these drugs on specially selected patients of whom I also give a short description. I would first draw attention to a six months trial made on the following lines. Certain cases were selected and observed for a period of three months during which time they were getting no drug treatment at all. They were then put on the following drugs. Twenty grains of bromide mixed in equal parts of potassium sodium and ammonium with the usual two minims per dose of liquor arsenicalis and with the last two doses of the bromide mixture, either 5 grains of Veronal or 7 grains of trional or 7 grains of sulphonal were given. These latter drugs were given in rotation and each for a week at a time. Two days in each week were left entirely blank so far as drugs were concerned.

The bowels were regulated carefully during the whole time and a careful record of the several weights was kept.

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THE SELECTED CASES.

K.M. Chronic Hallucinatory Insanity - male aged 42 years. This patient has hallucinations of seeing, hearing and of cutaneous sensation. He has been a nuisance for years because of the noise he has made shouting and swearing at the pitch of his voice until he was hoarse and only waiting till his voice recovered to begin again. If the noise were interfered with in any way or even if he were removed to a place where he would not irritate others, assault was sure to follow, and then he tore his face with his nails till he was dripping with blood, at the same time becoming filthy. These outbursts were often of daily occurrence and happened at least 4 or 5 times a week. They were also very frequent at night. He described his torturers and swore at them in a frightful manner, adopting the most threatening attitudes. He described worms going out and in at his anus as like bees humming out of and into a hive.

S.N. Aged 44 - a male - a case of chronic Delusional Insanity presenting many of the same characteristics as the last case and with hallucinations and delusions which were always causing him to attack attendants/

attendants and smash windows. He was particularly noisy at nights, shouting and singing to keep his persecutors away or fighting with them when they had gained access to his room. Much of his disease was of a sexual nature and women were his chief persecutors. This state of affairs had been in existence for many years.

D.T. Aged 22 - male - an early case of Dementia Praecox. This patient was very prone to impulsive attacks on attendants, throwing his chamber or mug at them when their backs were turned or suddenly butting them in the abdomen with his head during the day. At night he was nearly always noisy and especially in the fore part of the night.

During the time that he was not creating a disturbance he was in a stuporose condition and had frequently to have his meals given to him or he would have done without food altogether. It was possible to rouse him out of this stupor but he would not carry on any connected conversation. He is very dirty continually voiding his bladder in his bed or on the floor of his room. He has a constant flow of saliva and is either spitting continuously or the saliva dribbles from his mouth and soaks his pillow. For a while the stupor masked the condition but the patient is now definitely considered as a dementia praecox.



B.T. Aged 43 - a male - a characteristic case of Dementia Praecox, but at a later stage than the last case, very restless, and occasionally excited during the day, but particularly given to shouting and various kinds of noise during the night. This patient is also apt at various inopportune moments to make insidious attacks on attendants and to strike out at any one or anything that may be near him, patient, attendant or chair. He then requires to be controlled by four or five attendants, kicking, biting or butting until the impulse passes and he is quite quiet until the next attack. He says one day that he is the Almighty and on the very next day will tell you that he is the devil.

K.L. Aged 36 - male - a restless noisy and demented epileptic given to impulsive attacks either on attendants or patients or windows for no apparent reason and the impulse very soon passing. He is specially noisy at nights and is always waking other patients by his wild and sudden shouting. He seems to waken up four or five times each night, shout loudly for a few minutes, then go to sleep again. He is very demented and cannot talk sensibly, in fact does not talk at all.

A/

A record of noise was kept by the attendants who were instructed to make special note of these patients and always to put their names on the night report whether there was any noise or not. Noise during the day was not recorded but it was remarkable how it diminished and how seldom in the second period of three months any force was necessary to control these patients in a violent outburst.

They were all exceptionally difficult cases to manage and not the type of case found in an ordinary asylum so that a very good opportunity has presented itself to testing the real value of the drugs tried. Again it should be noted that the idea of any cure was not so prominent as the idea of arriving at a good method for keeping these patients within reasonable bounds for a prolonged period.

As was expected during the trial there were a few outbursts which were not controlled by the routine administration and it became necessary occasionally to employ more drastic methods. Usually a dose of castor oil with six minims of croton oil was very effective whether due to the discomfort or purely to the mechanical action is open to question, but the effect generally lasted for some considerable time. For very violent outbursts sulphonal was used. Sixty grains being/  
being/

being given as a single dose or in two doses of thirty grains at intervals of about three hours and then forty grains on three succeeding days and on the fourth the bowels were briskly moved with a saline purge.

It is very necessary to remember how insoluble sulphonal is and to follow its administration with a large hot draught. A good way is to make the sulphonal into a paste with hot milk in a spoon and give it with the spoon, afterwards giving a pint of hot milk to drink. On nearly all the occasions sulphonal proved effective in quieting the patient, in fact during the six months only once did it fail. On this occasion the bowels were thoroughly evacuated and a  $\frac{1}{50}$  of hyoscine with  $\frac{1}{3}$  of morphia sulphate was given and the patient went quietly to sleep in thirteen minutes.

NOISE RECORDED

IN THE CASES OF THE ABOVE FIVE PATIENTS.

July	August	September	During this period the drugs were not being given.
49 noisy nights	41 ditto	58 ditto	
October	November	December	
46 noisy nights	29 ditto	18 ditto	

or/

or dividing by five the number of patients to get the average number of noisy nights for each one gets July 9.8, August 8.2, September 11.6 and October 9.2, November 5.8 and December 3.6 giving the total average per patient for the first quarter at 29.6 and for the second quarter as 18.6 or a 38% decrease in the noise.

WEIGHT IN POUNDS.

	July	Aug.	Sept.	Oct.	Nov.	Dec.
K.M.	147	146	144	151	155	159
S.N.	142	139	141	141	138	127
D.T.	143	144	147	-	-	161
B.T.	152	151	151	153	154	157
K.L.	135	133	131	135	135	139

This table of weights speaks for itself, Only in the case of S.N. who is at present in bed with a high temperature and on a milk <sup>diet</sup> with Influenza is there any falling off of weight and I feel sure that this would not have been the case but for his unfortunate attack of Influenza.

The drugs do not appear to have had any bad effect on those five patients and the extra sleep during the night and the extra mental quiet during the day/



day seems to have increased the bodily weight in all cases with the one exception mentioned.

The bodily weight and its increase or decrease I take to be the supreme test in insanity as to whether a patient is benefiting or otherwise from any treatment he may be getting and that in almost all cases.

Chloral Hydrate was always given with potassium bromide or with a mixture in equal parts of the three bromides and usually twenty grains of the bromide and ten grains of the chloral twice or thrice daily sometimes the dose was increased to thirty grains and fifteen grains respectively. If only given twice it was administered after the mid-day and evening meals.

In the series of cases that was getting the bromide mixture regularly and the sulphonal veronal and trional in rotation by error on one occasion the bromide and chloral mixture was given for four or five days. The patients with one exception all became noisy and at first it was thought that the drugs were losing their effect and it was a relief to discover the true reason.

This I think helps to demonstrate that chloral hydrate has a stimulant action in motor excitement and should as a rule only be given in depressed cases.

D.C. Aged 30 - male - a paranoiac who was for a long period and still is very melancholic because of his systematised delusions, eluded the attendants who were aware of his condition and threw himself from a height of about ten feet on to a concrete pavement. He sustained a fractured base in the anterior and middle fossae with great effusion of blood at the orbit and profuse bleeding from the ear. He was very restless and with difficulty kept in bed. At first two drachms of Paraldehyde were given at night and twenty grains of bromide with ten grains of chloral three times a day. In two or three days the paraldehyde was discontinued and he was perfectly quiet and manageable on the chloral and bromide which was reduced to twice daily at the end of a fortnight. Occasional attempts to struggle and get out of bed were still made but nothing like the earlier apparently determined attempts and the patient spent the greater part of both night and day quietly sleeping and made a perfect or almost perfect recovery with only some slight defect of speech, although his mental condition has remained unaltered and it is probable that he will again attempt suicide.

Paraldehyde. This is essentially a drug to be given in the evening or at any rate shortly before sleep is desired. It is also useful given/

given to anticipate the action of sulphonal or some other drug. It was given in the case of D.C. and certainly kept him within bounds until the chloral and bromide began to act. I have not given doses of 6 or 8 drachms of Paraldehyde at a time, but have always found that two drachms repeated if necessary in half an hour were sufficient.

S.G. Aged 40 - a male - had had a bad coryza with intense frontal neuralgia and was discovered in bed during this attack apparently unconscious and presumably having had a fit as there was a history of epilepsy years ago. He recovered consciousness quickly but was very restless and irritable and referred frequently and persistently to the pain in his head, and he could not get any sleep. On this and the following night two drachms of Paraldehyde procured from 7 to 8 hours continuous sleep, although the pain was still complained of when he was awake and in fact persisted for about a fortnight.

U.T. aged 70 - a male - for many years had been showing no signs of insanity and behaving in an exemplary fashion. He was discharged to a home where he would have some light work and pleasant conditions in the country. Almost at once his mental balance was upset, and in three days he had to be returned/

returned maniacal, unmanageable, and with delusions of grandeur. He thought that he was the Prince of Wales.

He was at first quite sleepless but again two drachms of Paraldehyde procured quiet sleep and at the time of writing when he is filthy and highly excited the same dose still gives him four or five hours of quiet sleep whenever it is administered.

Sulphonal S.D. a chronic case subject to violent outbursts of shouting and attacks was given 60 grains of sulphonal followed by three doses of 40 grain on successive days on the occasion of a specially violent and prolonged attack. The first dose produced quiet in two and a half to three hours, and he remained quietly in bed during the administration and for 7 to 10 days afterwards.

B.N. 29 - a male - during an attack of acute mania started to smash windows and to use threatening language to the attendants. He was given the same dosage of sulphonal as in the last case and with the same beneficial result.

The patient suffers from mitral incompetence and has on several occasions had to be given sulphonal in the dosage mentioned. The drug seems never to have had any bad effect in spite of the heart condition.

Amylene/



Amylene Hydrate is an expensive drug and one that one could not justly use at public expense; it was given a trial on several occasions when one would ordinarily have prescribed Paraldehyde. It proved on all occasions (7 or 8) very efficient producing sleep more rapidly than one would have expected in Paraldehyde, in one case in less than five minutes, and also the patients appeared to sleep for longer periods at times eight or nine hours. The dose given was a drachm and a half. This dose was not exceeded nor repeated nor was it ever necessary to do either. If amylen hydrate were less expensive it would be a much used drug in asylum practice.

Hyoscine Hydrobromide B.T. was on one occasion quite uncontrolled by the routine administration first described, and after 60 grains of sulphonal with three subsequent doses of 40 grains on succeeding days was still being controlled almost continuously by two attendants. He was given  $\frac{1}{50}$  of hyoscine with  $\frac{1}{3}$  of morphia sulphate hypodermically and went to sleep in exactly thirteen minutes and woke up in four or five hours, quiet.

K.Z./

K.Z. aged 21 - male - an impulsive defective was unmanageable except by four or five attendants.

As the result of having been refused an unreasonable request he was banging his head on the walls and floor, and also biting his hands and arms to the copious effusion of blood. He was given  $\frac{1}{50}$  of hyoscine and  $\frac{1}{3}$  of morphia with little or no effect. This dose was repeated in  $3\frac{1}{2}$  hours also with little effect, but he slept soundly that night and began again in the morning saying that he was trying to "do himself in". He was given  $\frac{1}{25}$  of hyoscine and  $\frac{1}{3}$  of morphia again hypodermically and slept for two hours snoring stertorously, he then wakened up but on this occasion was quiet although now showing no effects of the drug, that is to say he was not drowsy or sleepy and was asking for the food he thought he should have had while asleep.

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Chloretone appears to be a very useful drug, and I will only quote one case in which it was a conspicuous success. The case is that already mentioned in connection with the use of Paraldehyde, viz. U.T. The paraldehyde was not losing its effect, that is to say, it was still giving 4 or 5 hours of sleep after each administration but between doses the patient was maniacal and very difficult to deal with. He would not stay in bed unless under constant observation, he was dirty with his food and was passing both urine and faeces in bed. He would not keep his night shirt or the blankets over him and was several times quite naked when the attendant had turned his back only for a few minutes. It became evident that something else must be tried if the patient was to recover his former mental balance. Ten grains of Chloretone were given three times daily after food and from the very first the effect was remarkable. The patient lay quietly in bed and did not throw off the bed clothes not attempt to get out of his night shirt. He did not pass faeces in bed because he was able to be relieved at regular intervals which before was next to impossible and the passage of urine was also controlled in the same way. He became distinctly more reasonable and was comparatively easily managed.

The chloretone was then stopped after about a week's/

week's quiet and within 24 hours all the previous symptoms had returned and were as bad as ever. In my opinion if the chloretone is given again as it will be, probably the patient will soon become a quiet and decent member of the community. This result has however, at the time of writing, not been achieved.

Bromural This drug is so very expensive to buy that many experiments with it were not made.

Nevertheless it was specially tried in one very difficult case and proved that it was not without value. Still while it is so expensive it is not likely to be much used in asylums or prescribed much in private. The case of S.N. whose noise it will be remembered was usually in the fore part of the night was taken off the routine administration and at once became specially noisy and troublesome, being quite recovered from his attack of influenza. He was given five grains of bromural at night for two nights with only a moderate degree of success. On the third night he was given ten grains and was perfectly quiet. The dose was reduced to five grains on the fourth night and continued at that dose until it was considered that a sufficient trial has been made.

During the experiment he remained quiet and slept well, a state of affairs which from the nature of the case/





case and previous experience would only reasonably be put down to the effect of the drug.

Chloralamide. This drug was tried and proved specially useful in the case of E.I. a paranoic aged 55, with delusions of suspicion against free masons in particular. He was supplied with an upper plate which irritated a canine tooth of his own and set up inflammation of the maxillary sinus. He spent two practically sleepless nights although pus was discharged freely.

Thirty grains of chloralamide dissolved in water to which a drachm of whisky was added gave six hours sleep although he still complained of pain on waking. The same satisfactory result was obtained on subsequent nights although the pain during the day was bitterly complained of.

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THE RELATIVE VALUE OF THE VARIOUS DRUGS USED.

Considering the results obtained in the foregoing trials which although they have not extended over a very long period have still been made on a type of patient which is well calculated to prove the efficiency or inefficiency of any drugs used, one can with a certain degree of accuracy sum up the relative value of the drugs used with a fair amount of satisfaction to oneself.

The trial of a series of drugs in combination and for a prolonged period, for the trial is still going on and is giving even better results than those tabulated - is perhaps the most important and useful experience gained. It is granted that the drugs used might be varied and that other hypnotics might with advantage be introduced, but the combined effect of such small doses seems to prove that this is an effective and harmless way of gaining the desired end of peace during the day and sleep during the night. The effect on the bodily weight of the patient seems to indicate that the administration of these drugs has been beneficial and has improved the physical condition as well as making the patients more fit to associate with their fellow patients and indeed it would seem strange had the weight not gone up, as the amount/

amount of sleep previously lost and the amount of energy expended in useless noise and violence has been converted to a more useful end.

Paraldehyde and Amylene Hydrate are invaluable hypnotics and of the two, the amylene hydrate seems to be the more effective. They are used when there is difficulty in getting to sleep, in cases which once sleep, remain sleeping for a reasonable period. Again they may give a period of quiet when the action of some slower drug is being waited for. Even in pain where there is exhaustion and great need of the sleep which will not come, they are worth a trial and often bring about the desired end.

Sulphonal is an emergency drug and for prolonged use is one of the best motor depressants and does not seem to be so dangerous as had been thought hitherto.

I have not seen a case of haemato porphyrinuria and have several times recently read of observers of wide experience who state that they have never seen a case of this kind. On very few occasions has sulphonal not proved efficacious and that in a short time in the dosage mentioned above.

Hyoscine Hydrobromide with a quarter or a third of a grain of morphia is in my opinion the last court of appeal, and will not be likely to fail. The drug must/

must be given in doses far in excess of the pharmacopeal ones if it is to maintain its position as a motor depressant. While it would not be wise to give a new patient a large dose of hyoscine one gets to know the capacity of the patients under ones charge and can gauge the correct dose for each individual case with some accuracy. Each patient should be tried with orthodox dosage and this increased until the requisite quantity is reached. I have never given this drug by the mouth, but always hypodermically and have been very careful to make quite sure that the whole of the determined dose went into the patient in solution. I have seen none of the theatrical effects of the drug that are described and certainly nothing in the least alarming. I remember being told at a course of lectures on therapeutics that its action could only be compared with that of apomorphine and that as the patient in this one case often vomited before the needle was withdrawn so in the other case the maniacal patient was often asleep.

Such a potent drug must always be respected still if it is feared many disappointing experiences will be the result, in fact it will hardly be used at all and a valuable aid will be lost.

Two drachms of paraldehyde in a suitable case may have a much more rapid effect than  $\frac{1}{50}$  or  $\frac{1}{25}$  of hyoscine/



hyoscine in the type of case to which it would be administered.

Chloral Hydrate is a useful drug in its proper place and was always prescribed in combination with the bromides. The point that is worthy of emphasising is that it should not be given where there is motor excitement as it tends at first to increase this even if in the end it produces sleep. The initial stimulation seems often to last until the hypnotic effect cannot be attained. I would again draw attention to the interesting and instructive mistake made in the series first discussed. When bromide and chloral was given instead of the simple bromide and the effect was so marked as to call for notice at once, so that the error was quickly rectified.

Croton oil. This part of the treatise would be incomplete if further mention were not made of croton oil. This valuable drug often used and used effectively will of its self, frequently bring to an end a violent outburst in the course of an hour. If it is deemed necessary, sulphonal may be given shortly after the oil, and its action kept going for as long as is required. Here again the pharmacoepal/

pharmacoepal dosage is not to be depended on when dealing with the insane. The drug is best given in a tablespoonful of castor oil and the dosage which is determined individually is from 4 to 6 minims and sometimes eight or nine. Given in the pharmacoepal doses it frequently fails to move the bowels once.

It has a good effect on outbursts of shouting as also in making the impulsive smashing or assaulting of the weak minded fewer and further between. The mere mention to a dement that if he does not stop his noise he will have to get medicine, I have seen quite effective on many occasions.

Chloretone appears to be of distinct use and especially in mania, and I would also add mania in an old patient. In young and middle aged patients in violent attacks of mania it is probable that a more potent drug would be administered. I have not tried chloretone in maximum doses in this type of case but have reserved the trial until a suitable occasion arises.

Bromural seems to produce the same sort of result as paraldehyde or amylene hydrate, and although it had this effect in a specially selected case on which paraldehyde alone never had any/

any appreciable effect as mentioned before its cost will always militate against its general use. It seems to be a drug which if kept in reserve for special emergency could be fallen back on when paraldehyde or amylene hydrate had failed.

Chloralamide was not tried as a sedative but as a hypnotic in a case where pain was a marked symptom and it proved to be of great use in the case mentioned so that although it may not be a drug to prescribe specially in asylums still it obviously has its uses.

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SUMMARY AND CONCLUSIONS.

The deductions drawn from the above observations and clinical trials of hypnotic drugs are the following:-

- I. That a combination of the bromides in moderate doses and other drugs in small doses such as veronal, trional and sulphonal given in rotation for a week at a time, administered over a prolonged period is very effective in chronic insanity where the main feature of the case is noisiness during the day and noisiness combined with want of sleep during the night.
- II. That in the administration of such a course of treatment two days in each week should be drug free. The patient's bowels should be carefully regulated and their weight systematically recorded. The treatment should only be regarded as satisfactory when there is an increase of bodily weight.
- III. That in motor excitement the best drugs are sulphonal and hyoscine hydrobromide, the sulphonal for somewhat prolonged cases and the hyoscine in emergency of a more critical nature./



nature. The latter drug is practically useless in the pharmacopeal doses, and each case should be treated according to what experience has shown to be an adequate dose.

- IV. That croton oil is also a very useful drug in motor excitement and again in doses twice or three times that of the maximum pharmacopeal dose. It should be given in castor oil.
- V. That chloral hydrate should be given with bromides and that its use should be reserved for cases where depression is a feature of the disease.
- VI. That paraldehyde and amylene hydrate in the right type of case are very effective in initiating sleep and that the latter seems to be the more potent both as to rapidity of action and duration of effect.
- VII. That chloretone is a useful drug and is specially worthy of trial in acute mania in an old patient.
- VIII. That bromural has its uses and should be tried to initiate sleep if paraldehyde or amylene hydrate do not succeed.
- IX. That chloralamide has its uses and seems to procure sleep where there is a considerable amount of pain.

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