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I N S O M N I A

Clinical observations and some Therapeutic suggestions,
by William Cullen, M.B., C.M.

If we pay no attention to Sleep, we thereby admit that
a third part of our lives is unworthy of investigation.

Manaceine.

Introductory.

Than Sleep, there is no condition except Death itself, which has been more a subject of speculation. Perhaps to the general practitioner this applies always. To him the problem of how best to recall a lost, or altered habit of sleep is one whose solution requires frequent consideration. The average healthy individual gives usually as little anxiety to the reason why he sleeps, as to why he eats food, or why he wears clothes. But when deviations arise in his customary methods of performing these acts, then reflections come and meditations begin.

That human life in its daily existence can be so ordered as to maintain an unstriking routine in well-being is perhaps desirable, but is rarely obtainable.

Such a series of circumstances is incompatible with the activities necessary for acquiring pre-eminence in industry, in Society, or in history; and without enterprise in some one of

these, or other directions, it would be difficult, like Cardinal Newman, to write an apology for our own lives.

Failure then in balancing the habit or function of Sleep, with diurnal experiences or physical conditions, being a familiar grievance brought to the consideration of the general practitioner, his attention, must frequently be exercised in, tracing the train of their causes; in judging their sequence; in discriminating their importance; and finally, in devising means for their removal.

In no disorder of human life is there an equal difficulty in deciding upon treatment. Idiosyncrasies while casual in other disorders, are constant here. Diagnose the disease and customarily the text books will provide you with a variety of treatment; part of it expectant, part of it active, and much of it pure placebo. Not so with Insomnia. The one and only text in treating that disorder is to remove the cause and you will remove the effect - cessante causâ cessat et effectus.

To effectively administer drugs is to exceed in most cases the standard dosage. Before doing so involves a minute and detailed examination, not only of the existing state of the organs, but of the family history as bearing on the temperament, and of the business history as bearing on the prognosis. After a full study of the case, and gaining as much information concerning it as the patient is willing to give you, you suddenly devote your attention in trying to find amidst the endless collections of therapeutics, a remedy to counteract the disturbing cause of an

unmeetable debt, a business dishonour, or a responsibility which is entirely personal, and perhaps unexplainable at that. However there are compensations in every thing, and for everything. The compensation here is, that in having sent for a medical man, the patient signifies that he is willing to submit to have something done for him. The reference of course is to that class of cases

.M.Jour- designated by Sir James Sawyer^x, "Intrinsic" or Primary Insomnia.
al, 1900
. 1551

No general practitioner can meet with an ever-lengthening string of similar cases during the course of years without gradually crystallizing his ideas and evolving a theory or a form of one, on the subject.

The great Nosologist of the 18th Century wrote that - "All progress was but the pursuit of theory", and in any case, any theory that tends to assist treatment in this admittedly troublesome disorder requires no apology.

The general practitioner amidst the exigencies of present-day practice is the one man left with the peculiar opportunities for forming clinical theories, and as these are built up less by speculation, than by demonstrable conditions, they should form a factor in guiding scientific experiment.

The Physiology of Sleep.

The phenomena of sleep have been a perpetual study to the philosophic and poetic minds, and have given to the subject an immense amount of literature and controversy. This literature and

controversy emanating as it has done, mostly from the process of superficial observation and analogical reasoning is of little value to the practitioner. Investigation by experiment and modern scientific methods is entirely a matter of recent years.

So lately as in 1890, A. W. Macfarlane in Insomnia and its Therapeutics wrote; "Briefly summarized, during sleep, the brain, ganglia, medulla and cord are in a state of repose; and the work of the economy is conducted with the smallest possible expenditure of energy". Such a statement explains nothing, and is little else than an example of the inductive process of reasoning.

Contrast it with Bradbury's article in Allbut's System of Medicine published in 1899. "There are several hypotheses as to the causation of sleep. It has been attributed to cerebral anaemia; to chemical changes in the brain cells, or neurons, such as an exhaustion of their intra-molecular oxygen, or an accumulation of fatigue products; to a contraction^c of the dendritic processes, and a consequent break in the transmission of nervous impulses; to an expansion of the neuroglial cell processes insulating the nerve cell processes, and producing the same effect; and to a purely psychological condition, namely, loss of consciousness apart from any physical or chemical change. The last explanation is simply a cloak for our ignorance. The most probable hypothesis is that of an altered metabolism of the cerebral cells dependent upon exhaustion, and diminished influx of stimuli".

Between two such statements there is a wide margin, principally

due to the activity of nerve-histologists in the interval, and yet the advance is not specially marked by information adapted either to enlighten the general practitioner, or assist him in relieving its morbid changes.

When in 1855, Professor Bain, the logician, published The Senses and the Intellect, and claimed sleep as one of the six appetites most usually present throughout the Animal tribes, he gave it a designation in time and character beyond which we have still nearly all to learn concerning it.

An appetite he defined as a craving produced by the recurring wants and necessities of our bodily or organic life. Sir James Sawyer in his Clinical Lectures has adopted this term. Exercise, repose, hunger, thirst and sex are the other appetites referred to.

Marie de Manaceine in an excellent and comprehensive monograph on Sleep written for the Contemporary Science Series, which embodies generally all that is known on the subject up to date, has evolved the theory that "Sleep is the resting-time of Consciousness."

Each of these definitions express something of, but not all the truth, about sleep. The imbecile, dispossessed of volition, and incapable of consciousness, still owns the appetite for sleep, and in an equal degree to his highly intelligent neighbours. On the other hand, the term Appetite does not cover that extension of slumber which regulates the function to a third part of our daily lives. If this is natural, then

When in 1856, Professor Hall, the London, published
the names and the meaning, and obtained along with one of the
1. This word originally the habit as distinct from the appetite

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turning wants and necessities of our bodies or organic life.

Sir James Gwynne in his Clinical Lectures has adopted this term.

2. As illustrating exactly what I mean by the habit of sleep in its
acquired form, let me instance the example of animals, which
have lived a natural, wild life, indulging the appetite of sleep only as they
found opportunity during their career in this state of existence.

Let these animals be captured and placed in healthy confinement,
as soon as they have adapted themselves to their new, and easier, cir-
cumstances, they at once develop a drowsiness and tendency to sleep
which will characterize them in a ratio inverse to that of their former
activity. The appetite has got lost in the habit. The
sleep of the average modern man is of this combined type.

On the other hand, the term appetite does not
cover that exaction of slumber which regulates the function in
a third part of our daily lives. In this is natural, then

sleep is as much a habit as an appetite - a daily habit of unconsciousness.

It seems to the clinician that the mechanism of man's activities must bear direct relationship to great first causes.

Man having no voice in the creation of the world, would in the faculties he first developed be forced to adapt them to the influences controlling them. These influences were daylight and darkness. "The night cometh when no man can work" - when, in consequence, he would have to dispose of himself until return of the day.

Before closing the eyes, whose guidance had become impaired by shade; before resting the consciousness, whose activities were for the time out of request; and before laying down the limbs jaded by exercise; the prehistoric man would seek a retreat which would combine safety and shelter - a bed. Then would emerge the appetite for unconsciousness.^{2.}

When we reflect on the habits of the first Napoleon; or on the adventures, in recent years, of Baden-Powell in Matabeleland, when he earned amongst the natives the cognomen of "The wolf that never sleeps;" or upon the adventures of Selous, the African explorer and lion-hunter; and find how insignificant the appetite may be, and how much mixed with active consciousness, even during sleep, then we must modify any attempt at a hard and fast definition, and conclude that the daily habit of sleeping is only a daily means of resting and restoring the activities, either mental or material, in a ratio depending

less upon appetite than upon opportunity. Selous laying himself down to rest in proximity to his horse would at once awaken if the animal ceased from eating. The trifling and rhythmic sound of nibbling the grass formed

"Sounds that are silence to the ear"

but yet necessary for the continuance of unconsciousness or such unconsciousness as exists in sleep. Such habits, and they are common in sleep, prove that resting the consciousness is not vacating it. Hearing, however, alike in modern, as in prehistoric man, is the last sense to slumber, and the last sounds of which we are conscious are the rhythmic movements of respiration, as the last feelings are those of Cardiac action.

Taking the salient, clinical features of falling asleep, we observe that:-

(a) The body always assumes that position of comfort which offers least resistance to gravitation; which involves least voluntary effort; and which conduces to the least necessity for consciousness.

(b) The eyes are closed to cut off ^{the} ~~that~~ ^{sight} sense from the disturbance of external stimuli.

(c) The position being relatively a fixed one, the organism will respire a warmer atmosphere. This is aided by the location being sheltered, and the increase of temperature is further sought by partially confining the organs of breathing. Animals place their noses over their fore-paws, or bury them in their fur. Birds place their heads under the wing. This can easily be verified amongst domestic animals, and I have

repeatedly visited the zoological collection in New City Road for confirmation amongst the captives there. Their proprietor, a very shrewd and careful observer of animal habits emphatically corroborates this, and informs me that for the special purpose of promoting sleep, he always keeps his establishment warmer at night than during the day. Charles Darwin has stated that man living in such a primitive state that he sleeps in the open and without covering, adopts precisely the position which I have repeatedly seen assumed by the chimpanzee and his compeers in the Zoo, both in sickness and in sleep.

Sleep and its resemblance to Death is a poetical fancy often quoted, though the reason is perhaps less understood; that man, alone amongst animals, has developed the death-like attitude of sometimes sleeping on his back.

In the actual causation of sleep there is doubtless some intrinsic change in those ultimate tissue elements in the brain which are concerned in consciousness, while there is also the demonstrated, or "coarser" change, of a diminished blood supply, and especially to the blood vessels of the cortex of that organ; it being an axiom in physiology that the quantity of blood in the brain is always the same, any alteration of the current being an alteration in velocity.

To obtain this anaemia of the brain, there must be a degree of stasis in other parts. This is most readily obtained on the surface of the body, and that is most easily induced by breathing a warmer air; by partially re-inhaling the breath;

by inspiring an added volume of carbonic acid. The sequence is to reduce cardiac action, and create tranquil, easy, circulatory rhythm - compos cordis.

The adoption of the horizontal position, already referred to, relieves the heart and slackens the cardiac impulse, as noted by Galen long ago. If this impulse then be turgid and rhythmic, there follows rhythm^{*} in the tissues dependent upon its service. Rhythm^{*} is synonymous with monotony, and no consciousness can cope indefinitely with that. Volition retires before it, and a state of slumber ensues.

There can be no such absolute rhythm during waking periods, since every sense, jointly or severally, is employed in one form or another; and it is the influence of their external stimuli upon the vasomotor centre, which keeps the subject from seeking the oblivion of volition always; that is, in considering what keeps the subject awake, in distinction to what makes him sleep.

To fatigue the attention is to employ it monotonously, that is, rhythmically. To fatigue the body and induce drowsiness, is to employ repetition of effort, monotony of volition - rhythmic mentalism. That over-fatigue prevents sleep is natural, for it involves forced mental effort, which is not natural. It creates non compos cordis. Balance then is lost, and rhythm is impossible until it is adjusted.

To his exact scientific knowledge, Sir Michael Foster added very close logical reasoning on this subject, and to him

belongs the suggestion that the "fundamental rhythm of the heart may be a reflection of the mysterious cycles of the universe, while it may yet be only the result of the inherent vibrations of the molecules of its own proper structure."

Without such rhythm and the concomitant circumstances which induce it, there can be no normal sleep, and all therapeutic treatment for Insomnia must watch this signal in guiding itself.

It may be, as Sanger Brown of Chicago, in Twentieth Century Practice of Medicine remarks, that "the ultimate causation of sleep is probably as unknowable as is the origin of force," and yet, when weariness in speculation comes to one man, patience and fresh perseverance arrives in another. Physiologists and nerve histologists will undoubtedly continue their researches and experiments, of which the normal complement will be the practice of the clinician.

Etiology of Insomnia.

Whatever classification may ultimately be adopted in discussing the types of Insomnia, there is certainly in my experience one general cause always in evidence in every form - what has already been referred to as non compos cordis; an arrhythmic cardiac action.

When we consider Insomnia as a condition where sleep, normally expected, is not obtained; we generalize on a disorder with as many varieties almost as there are diseases. It may be a leading feature in an illness; a concomitant occurrence; or merely an incident.

In a useful and readable paper contributed to the Birm. Med. Chirurg Review (Dec. 1892) Dr Suckling makes an attempt to classify these causes for practical purposes and includes them under the designations (a) Toxic; (b) Mental; and (c) Physical; but the weakness of such classification is manifest when it is suggested that a full and high beef-steak eaten near bed-time may be at once a toxic, mental and physical cause of sleeplessness.

Sir James Sawyer, in a more comprehensive and elaborate paper (Brit. Med. Journal, Dec. 1900) contributes a more recent and distinctly more satisfactory classification, although necessarily there remains a certain overlapping of causes which must always interfere with exactness in this direction.

The broad division into "Intrinsic," and "Secondary" Insomnia, with a further classification of the "Intrinsic" forms into (a) Psychic; (b) Toxic; and (c) Senile certainly covers the ground, and probably for practical purposes is as complete an arrangement as is possible in the present state of our knowledge; that is, the most prominent objective or subjective factor in its origin must be used as the classifying agent. Nevertheless, the one constant clinical condition associated with all forms of Insomnia is non compos cordis, and all treatment must be based on adjusting the circulation.

Treatment of Insomnia.

Pain, pyrexia, cough, and cardiac asthma being the more frequent forms of "Secondary" Insomnia are much more amenable

to routine methods for obtaining relief. With the intense pain of Acute Rheumatism, I have learned to rely upon nothing but the hypodermic injection of morphia, even pushed to an extreme degree. To the shock of pain we owe the very high temperatures and associated collapse from the re-action on the heart. The metaphysical law that action and re-action are equal and opposite rules here. Command sleep, and you maintain energy. In other words, preserve the heart in its normal rhythm.

With the acute pain of pneumonia and pleurisy, my faith is permanent in eight to twelve grain doses of acetanilid. This remedy acts by causing congestion in the superficial veins over the whole body; is frequently accompanied by sweating according to the dose; never fails to temporarily reduce fever; and is usually followed by a natural sleep, from, apparently, a resultant cerebral anaemia.

It has the advantage of possessing no subsequent bad effects. By relieving local congestion, it permits of rhythmic cardiac action. For this reason it is a useful agent under many other circumstances associated with sleeplessness, due to pain. Only twice in my experience, and I have used it for fourteen years, has its use been followed by cyanosis. A twenty grains dose in the very first occasion upon which I administered it was one of them. It was the case of a lady who periodically suffered from intense nervous headache, due to membranous dysmenorrhosa of some standing.

Comfort and sleep were unknown to her for a week out of every month. I had rung the changes upon all likely and unlikely remedies for her relief in former attacks. This time, the cure was agreeably rapid, and the lady was privately rejoicing in her new-found paradise, when a friend called who at once drew attention to her shocking appearance. The lady, however, was feeling so well, that instead of sending for me, she and her friend got into a cab, and called upon me instead.

I confess that I also was impressed by the livid and ghastly features, but in finding that the condition was entirely objective, I pleasantly suggested that she should drive home, and have a glass of wine, when her appearance would come all right again, which it did. I afterwards found that her necessary dose was twelve grains.

Immediately after, as the drug came into greater use, opinions rushed to the extreme of almost condemning it outright, even in five grain doses. I had found an approach to a panacea, and I have stuck to it. From that period to the present, there are ladies using it on my advice in seven, eight, ten and twelve grain doses, whenever they are "sick or sore or sorry", and always when they cannot sleep. With this, as with many other medicines, I have found amongst those who periodically use it, that a lesser dose is required in hot than in cold weather, in summer than in winter. Two grains is the amount less, and this because of its sudorific effect.

A form of "Secondary" Insomnia not infrequently met with

is that which accompanies cardiac asthma, or that form of heart disease due to obstruction dilating its cavities. Eight years ago I had considerable opportunity for studying the various phases of this, in a patient resident in my own house, and an incidental experience of a remedy which caused me some meditation. The lady was a relative, and an accident received during a twelve-months tour round the world had accentuated her ailment, until restless wakefulness had come to be a constant and wearying attendant. Her condition had also been the subject of numerous medical consultations.

On returning home late one evening - about 1 a.m. - my attention was at once attracted by the smell of smoke, which was easily traced to her bedroom. On opening the door, I found her room absolutely suffocating with it. With difficulty I crossed to the window, which I threw up and down, and opened an outside door adjacent to that of her bedroom. As the draught cleared away the smoke somewhat, I discovered that the damper of her fireplace had fallen. On rectifying this, I was soon enabled to see the patient. To my surprise, her colour and respiration were perfect. I had not seen her sleeping so peacefully or breathing as naturally for months before. She had been two hours in this atmosphere, since the damper must have got displaced at the time of replenishing the fire for the evening. As she continued asleep, I left her.

She did not awaken until 8 in the morning, when totally unconscious of the incident overnight, she declared that she

could not tell when before she had enjoyed such a long and refreshing sleep.

In explanation of this, I have thought of the modification of the Nauheim treatment in heart disease; where, when the patient is unable to take the bath, the carbonic gas is given them alone.

The above is but another method of doing the same thing; while the administration of carbonic gas generally is but another name for a custom reputedly introduced to this country centuries ago by Sir Walter Raleigh, namely, tobacco smoking. The effect is certainly due to the venous congestion, and the relief of the labouring heart.

Toxic Insomnia.

Tobacco, alcohol, tea and coffee are the noxious agents customarily producing this effect, and as they possess a direct action on the heart, causing over-stimulation and arhythm, the treatment is obvious, even to the sufferers. In many cases, however, the sleeplessness associated with alcoholism follows the stoppage of its use. I do not refer to the Insomnia of delirium tremens, but to a lesser degree of alcoholism.

For this particular variety, I have found the speediest and most satisfactory results from a very simple remedy. I will relate an instance. A patient rung my door-bell at 3 o'clock in the morning. It was his third night of insomnia. He had gone to bed, but could not remain in it; he was

so uneasy that he could not even remain in his house. Walking outside and praying for the arrival of daylight, he was delighted to see my house lit up, and with a courage which otherwise he would not have possessed, he called and asked to see me. I instructed him to go home and get into bed, then get someone to give him a full tumbler of boiling water, containing a teaspoonful of bicarbonate of soda, and two of whisky; and that he should sip this as hot as he could swallow it. Afterwards to place his head for five minutes under the bedclothes until he felt comfortably warm. As a result, drowsiness was very shortly induced, and he slept continuously for five refreshing hours. Next day he was his own man.

The effect was to tone the heart, raise the blood pressure, balance the circulation, disperse flatulence, employ the digestion, excite free ^mdermic secretion and flush the kidneys.

With more acute cases of alcoholism there is much greater difficulty in subduing the disturbing restlessness and sleeplessness. In particular cases I have, though at other times I have not, managed to get them to swallow this dose. There is then only one trustworthy and reliable remedy - the subcutaneous injection of morphia, in combination with a minute amount of atropine, to prevent or reduce subsequent sickness. One-third of a grain, repeated at intervals of 15 minutes, until the patient is overcome.

The subsequent sickness referred to, I do not specially object to, because by confining the patient to bed there is

given opportunity for relieving him of the craving. It is then the dose already described comes in, alike to relieve sickness and prevent re-action. After the first occasion, this is usually retained, and it can be alternated every three hours with aerated soda or potash water. The morning of the third day customarily finds a well, and wiser, though a weaker man.

Where the insomnolence is part of an alcoholism of a more chronic type, and where there is known or suspected mischief in the kidneys, I have found the administration of mindererus spirit (Aq. Ammon. Acet.) in such large doses as four ^{dr} drams, given in hot water, and repeated once an hour after, to produce the best effect. Whether in addition to heating and carbonizing the blood, the vinegar has also some neutralizing influence on the alcohol, I cannot say, but the benefit has been in several cases very immediate.

Psychic Insomnia.

From day to day some silly things
 Upset you altogether;
 There's nought so soon convulsion brings
 As tickling with a feather.
 'Gainst minor evils let him pray
 Who Fortune's favour carries;
 For one that big misfortunes stay, (stay)
 Ten die of little worries.

- Sims (Ballads of Babylon).

"Ten die of little worries," and countless numbers spend sleep-

...given opportunity for relieving him of the craving. It is
 than the dose already described comes in, like the relieve
 sickness and prevent re-attack. After the first occasion, this
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 with diluted soda or potato water. The morning of the third
 day customarily finds a well, and when, though a weaker man,
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in several cases very immediate.

1. Telling the patient to try and keep awake and to make an honest, conscious effort to do so, will, in such cases, induce sleep. This customarily seems absurd advice, but given seriously, has an undoubted moral, or telepathic influence. Moral influence in many cases of nervousness is simply an inspiration of the 'Rule of Contrary'.

As tickling with a feather.

'Gainst minor evils let him prey

Who Fortune's favour covets;

2. Whose species demon was insomnia.

- Sims (Ballads of Babylon).

"Ten die of little worries," and countless numbers spend sleep-

less nights from them. Feelings, or emotions, which are unfamiliar in the routine experiences of individuals disturb their rest by creating surprise or anxiety. A similar reaction follows excessive intellectual labour, or long-continued physical efforts. It is forced exercise, and re-acts on the on the heart. Whether the condition becomes fixed or transient depends largely upon the incidental state of the general health.

The possession of a true perspective in the relationships of life, and mundane affairs generally, is acquired labouriously and slowly, but it seems to depart easily and quickly in conditions of Insomnia.

The absurd views and fancies taken about everything in turn, by unslept neurasthenics is familiar clinically. The rhythmic harmony of life and the consequent rhythmic circulation of the body - the extrinsic and intrinsic parallels of existence - are broken, and restless uneasiness results.

One might justifiably question whether the causa causans of the sleeplessness is in the head or the heart. The effect is without doubt, however, in the heart. It may not be strikingly manifest; it is still always demonstrable. The heart is literally, not only the central organ of the mechanism, but the working member of the whole machinery, and all treatment must bear that in consideration.

Traditional and lay teaching has always done so. From and before Southey the poet,^{2.} the popular mind associated rhythm with the induction of sleep; and rhythm is essential

to the enjoyment of all our waking efforts. Carlyle's man who "Sings at his work," could only do so after it became routine or rhythmic by practice. It is only when our duties are "going smoothly" that we perform them comfortably. In dancing, in poetry, in music, there is perpetual rhythm. Our most ecstatic moments are the meditations following a musical rhythm in sympathy with our moods. In this spirit Handel said, the sublimest heights of music were its silences.

Heard melodies are sweet, but those unheard
 Are sweeter; therefore, ye soft pipes, play on, -
 Not to the sensual ear, but, more endeared,
 Pipe to the spirit ditties of no tone.

- Keats.

From a similar method of analysing the emotions, Madame de Stael defined Happiness as: A constant occupation upon some desirable object with a continual sense of progress towards its attainment. Which means, that the joy of living is intimately associated with pure unbroken rhythm.

Dr Sloan of Glasgow recently read a paper giving his experiences with the Faradaic Current in the relief of Insomnia. True, the aspect of simply inducing normal rhythm in the circulation or in the ideas controlling it is not referred to, but this is the only possible explanation of his apparently very satisfactory results.

The volume of current administered is of less interest than the fact, that his experience inclines him to have the

vibrations of the rheotome at the highest velocity obtainable. Given a high rate of regular and audible vibrations, and the sensory effect is bound to ensue. As already mentioned, hearing is the last sense to slumber, and by inference, the immediate one in controlling the cardiac movements.

To sing a child asleep is no novelty; only to do so requires an old and familiar tune. There must be no element in the sounds to excite attention - the effect is one of simple rhythm.

General Remarks on the Treatment of Insomnia.

I have, I hope, in the foregoing made it clear that in dealing with sleeplessness generally the aim is to obtain a normal cardiac impulse. Symptoms must always be considered in relationship to graver dangers. We know that in the condition of delirium tremens the lesser arteries of the brain are paralysed. The sleepless cerebral activity which results must accordingly have an accessory amount of stimulation to counteract the state of collapse of these vessels. There is high tension in the same arteries if the kidneys are not acting. There must be stimulation and abundance of hot diluents to flush the kidneys, and preserve the general arterial tone. When these small arteries lose their elasticity, and become weakened and dilated in senile degeneration, the blood pressure must be raised, and sleep induced by filling them with warm fluids, possessing a necessary and moderate amount of alcoholic stimulant.

If the Insomnolence be caused by an ignored but not uncommon habit of going to bed with a full stomach of fermenting material, an evacuant is manifestly called for in the first instance, and avoidance of the custom for the future. The over-worked man must not continue over-worked - in fact the old dictum of Sir William Gairdner, that:- All treatment consists in an application of commonsense under scientific discipline to all the circumstances of the case - finds here an opportunity always.

It is an easy matter to select cases, and table the steps taken in dealing with them; which drugs have been used in rotation, with their doses; their physiological effect, and so on, but without a knowledge of the individual's family history; his condition of robustness; physical weight; mental capacity; temperament; and the character of his occupation, such statements barely form statistics.

For this reason, I have not diverged into a disquisition upon the innumerable narcotics and hypnotics now at the disposal of the general practitioner, and whose action is either so mysterious or so mystifying to the beginner, that I find the average young graduate in medicine incapable of writing a prescription in any way adapted for a particular case. Experience and experiment plus the application of observation and natural processes of inductive reasoning are involved in the administration of most drugs, but especially hypnotics.

Their effective use in nearly every case requires a higher

than the standard pharmacopoeial dose, and to exceed such limit always means anxiety and carefully watching the result. All experience results in narrowing the endless list of these remedies down to what can be relied upon for immediate or emergency effect; and to emphasize the cautious principle, never to use an active means of doubtful danger where a simple method has an equal chance.

It is, however, the teaching of my own, and I believe most others, experience, that hypnotics act better and more reliably in combination than alone.

To apply a mustard leaf over the heart, or to cover the stomach and the central sympathetic system with a mustard poultice as a means of inducing sleep may seem unusual, but the effect is not unknown clinically. Covering the face with a light handkerchief and partially re-inhaling the breath increases the surface temperature of the body, and induces a sensation of comfort and drowsiness, very commonly, in the sleeplessness of old people. By heating the atmosphere breathed this is a familiar means also of relieving spasmodic coughing which often prevents slumber. The skin glow resulting from friction with a strong brine made with Tidman's Sea-salt deserves to be remembered as a useful agent in the Insomnia of Senility, where brittle arteries must never be forgotten, and where a feeble heart is a normal condition.

I have one striking instance of an unstable mind, which, beginning with worry, advances with sleeplessness, until acute

insanity results, but which during the last two attacks I have absolutely averted by a little patience and the use of a full grain of morphia sub^{cu}stantaneously.

Failure to use this simple means has cost this patient twelve months of her life in a lunatic asylum, besides giving to her family this flaw in its history. The protracted sleep, undoubtedly anxious, risky, and needing careful watching, gave the heart opportunity for rest, and restored it to a more normal rhythm, and enabled the ideas to adapt themselves again to their surroundings. There may be pseudopodic changes in the cerebral nerve-cells which were restored by this treatment, but clinically the main influence arose from resting the heart.