

1. *Magnetic Method.*—Those who believe in animal magnetism assume that a special magnetic influence emanates from the operator upon the subject. Therefore standing in front, the hypnotist gazes fixedly upon the eyes of the subject and makes long sweeping passes from the head downward, believing that in some way the peculiar fluid streams from his fingers and thus best influences his subject.

2. *Fixed Attention.*—Braid's method consists in fixing the eyes upon a bright object placed a little above the eyes in the median line; the intent being to produce visual fatigue quickly through the undue strain of convergent strabismus.

In a successful experiment after a time the subject becomes relaxed, his eyelids tremulously close, and he appears to be in a semi-somnolent condition. This is the usual method of procedure, but is somewhat open to objection. The unusual nervous tension required at times has resulted in an acute hysterical attack.

3. *Method of Salpêtrière School.*—Charcot in his experiments upon hysterics established three more or less distinct states of hypnosis:

(1) The cataleptic state, produced—

(a) Primarily by the influence of a sudden intense noise, by a bright light flashed before the eye, or further by fixation, more or less prolonged, of the eyes upon any object;

(b) Secondly, to the lethargic state when the eyes hitherto closed are suddenly opened to a bright light by raising the eyelids.

(2) Lethargic state, produced—

(a) Primarily by the influence of fixation of the eyes upon an object placed at a certain distance away;

(b) Secondly to the cataleptic state, by simple closure of the eyelids.

(3) State of induced somnambulism, produced—

(a) Primarily in some subjects by fixation of attention, or

(b) Secondly, easily with subjects already in a lethargic or cataleptic state, by making simple pressure or light friction upon the vertex.

In these various states of hypnosis certain characteristic phenomena are present. In the *cataleptic* condition the subject is immobile, he appears to be fascinated. The eyes are open, staring, and soon become suffused with tears. There is no winking of the eyelids. Very frequently there is anaesthesia of the conjunctiva and even of the cornea. The limbs and all parts of the body preserve their position for a long time, even attitudes very difficult to maintain which may have been given them—a "wax-like flexibility" very characteristic. The tendon reflexes are abolished and neuromuscular hyperexcitability is absent. While analgesia is complete, certain senses, muscular, visual, and auditory, preserve their activity. This persistence of sensorial activity makes it possible through suggestion to provoke hallucinations and develop automatic impulses at the will of the operator.

In the *lethargic* state, the similitude of profound sleep, there is complete analgesia of the skin and mucous surfaces accessible. The limbs are relaxed, and if raised fall slowly. The pupils are rolled upward, the eyes closed or half closed, while one sees an almost incessant quivering of the eyelids. The tendon reflexes are exaggerated and neuromuscular hyperexcitability is always present, though in varying degrees. This phenomenon, similar to the muscular contractions caused by the faradic current, may be produced by mechanical pressure alone, e.g., by the touch of a pencil. Even muscular contractions more or less prolonged may result, which are readily resolved by stimulating antagonistic muscles.

The *induced somnambulistic* state corresponds more particularly to the condition of "magnetic sleep," so-called. It more nearly resembles the state of lethargy, yet there is no neuromuscular hyperexcitability as described above. Cutaneous analgesia is present, but at the same time there is a very remarkable hyperacuity of certain forms of sensibility of the skin, of the muscular sense and of some of the special senses, sight, hearing, and smell.

It is easy through suggestion to call forth very complicated automatic actions which are induced manifestations peculiar to the state of artificial somnambulism, the active hypnotic condition (Charcot, "Œuvres Complètes," Tome ix.).

4. *Method of Suggestion.*—The method of inducing hypnosis by suggestion was practically, though not primarily, developed by the Nancy school, of which Lièbeault and Bernheim are the leaders. The idea of sleep is suggested to the subject's mind by every possible means, physical as well as mental. The subject is thoroughly reassured and placed in a comfortable position, so as to invite mental and physical repose. He is then told that he feels sleepy, that his eyelids are getting heavy, that he can scarcely keep awake, in fact he is going to sleep, etc., until a condition of semi-somnolence is established. This method has the merit of resulting in no danger to the subject, but it may require many sêances before the successful end is gained.

The combination of the two methods of fixed attention with sleep suggestion is most commonly used in America, and with proper care will yield satisfactory results.

It is essential, however, to the successful therapeutic use of hypnotism that the subject be well trained as a hypnotic before suggestive treatment be given. It is just here, doubtless, that many physicians have failed while the professional hypnotizer has succeeded.

The following plan, suggested by A. E. Carpenter, merits attention and will lead to more successful results than the usual haphazard efforts for inducing hypnosis sufficiently deep for therapeutical or experimental purposes: No sêance should last over long, lest undue fatigue result. The sêance may be repeated, however, once or twice a day until the operator secures satisfactory results or concludes that his subject cannot be impressed. If, however, the state of semi-somnolence is developed, assure the subject that he cannot open his eyes, at the same time making a slight pressure upon the eyelids; and we find that the lids come open with more or less difficulty, or not at all. Later, the command alone is sufficient to prevent the lids being opened, and the patient becomes receptive to audible suggestion. Further suggestion both by touch and by command will affect other muscles; for example, the patient is told that he cannot open his hands when firmly clasped, pressure at the same time being made on the spine at the base of the skull.

This is repeated until the experiment succeeds. Later the same condition may be produced by command alone, or again by the mere clasping of the hands together. In a similar manner control of all the muscles of the body may be secured. In turn the special senses may be educated in a similar way. The sense of feeling is most readily affected by suggestion and should be attempted first. It is important at the outset, when making suggestion, that the idea conveyed be not inconsistent with fact; for example, in a warm room it is wiser to suggest undue heat than extreme cold. After securing thorough control of the sense of feeling, subdue the sense of sight, employing the sense of feeling to aid in its control; for example, by making a suggestion which would involve both feeling and sight. In the same way one may gain control of the senses of hearing, taste, and smell, through means of others already subordinated. When once all the senses are under control of the operator, the therapeutic application of suggestion becomes simple. In some instances an impressionable subject becomes so susceptible to suggestion that hypnosis may be subjectively induced by mere concentration of attention—the autohypnotic state so called. Naturally it is of extreme importance to the success of the performance that the whole manner and tone of the operator convey assurance and never doubt of the result. Nor must it be forgotten that it is not impossible for the operator himself to become hypnotized by the exercise of too fixed attention upon the patient. Undoubtedly many operators have been deceived by apparent hypnotic phenomena through the reaction of suggestion upon their own minds. They see what they are "looking for."

The phenomena of hypnosis under the influence of suggestion are very variable, from the simple trance-like sleep to the complete control of the subject obtained in the condition of somnambulism. In the deeper phases the subject seems conscious only of the hypnotist and implicitly believes and follows out whatever suggestion is made. Upon awaking from the hypnotic state no conscious memory remains, yet a suggestion given during hypnosis may be implicitly obeyed at a period more or less remote. This is the post-hypnotic suggestion so called, and enables the operator to influence the subject after the hypnotic state has passed away. Thus in the treatment of dipsomania a suggestion is made during hypnosis that whenever he takes a dram he will be overcome with nausea. This associated idea is ever ready to meet the imperative habit and develops disgust and thus works a cure. This indirect or associated suggestion seems more powerful than the direct command to avoid drinking.

In the lighter phases of hypnosis the subject seems semi-conscious, but does not readily or at all respond to suggestions widely at variance with fact. He may not be able to open his eyes or shut his mouth, or raise a hand except at the will of the operator, but the assurance that his neuralgic pain is gone brings a smile or even breaks the spell. In the deeper or somnambulistic state no delusion suggested by the operator is too incredible. Every suggestion becomes an imperative idea, dominating feeling and emotion and controlling their physical expression. It is, however, a striking commentary upon the subjective nature of hypnosis that no suggestion of an idea foreign to the cognizance of the subject will gain representation. The fountain never rises above its source.

It will be readily understood how the symptoms of disease may be relieved; but that the disease itself may be arrested or cured is by no means so credible.

Its greatest service will be found in dealing with morbid psychological conditions, such as fixed ideas, morbid habits, sexual perversion, etc.

The various students of hypnotism have formulated certain rules regarding its use which it is well always to observe.

Public sêances of hypnotism by professional hypnotizers should be forbidden by law. Hypnosis should be employed only by physicians or psychologists familiar with the physiology and pathology of the mind.

It should never be induced without the consent of the subject or his legal guardian.

It should not be employed except in the presence of a third person.

Suggestions which are contrary to his moral nature should never be made.

After the employment of hypnosis the patient should always be awakened and left in a calm mood.

Regarding its medico-legal relations, it is pretty well established that in no case can a suggestion contrary to the moral nature of the subject succeed, the antagonistic instinct serving in turn as an overpowering negative suggestion.

Hypnosis is not a miraculous method of treatment to supplant other means, but rather a species of education of the mind which must be sufficiently repeated to secure permanence.

While it seems an easy way to relieve many forms of nervous trouble, in reality its permanent value is very limited. It is true that anaesthesia has been successfully induced by its means, and serious operations have been performed without pain. Medical literature teems with examples, but so few patients are sufficiently susceptible at first trial that it is of little practical value.

Hypnosis prolonged for hours, even days, has occasionally been of value in intractable forms of hysteria, and undoubtedly should be tried when other more rational measures have failed. But training of the hysteric to secure self-control is of more lasting benefit, and far more rational.

Among American neurologists the concurrent opinion is against the employment of hypnotism as a therapeutical measure. At the present time its greatest utility lies in the field of investigation of psychological phenomena rather than in the relief of pathological conditions.

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HYPNOTICS are medicines used to induce sleep. Their utility depends upon their power of arresting the functions of the cerebrum for some time without endangering life or health.

Two views prevail as to their mode of action. According to the older one, they induce sleep by rendering the brain anæmic. The anæmia is supposed to result from a direct influence on the vaso-motor nerves, in consequence of which the cerebral vessels contract and thus diminish the quantity of blood circulating in the brain. This view was based on two facts frequently observed in experiments on animals whose brain had been exposed to view, viz., that the brain invariably is anæmic during natural sleep, and that it becomes anæmic during the artificial sleep induced by medicines. The brain presenting the same pale appearance in both forms of sleep, it was concluded that both are due to the same cause—a lessened flow of blood in the cerebrum.

But the theory that normal sleep is caused by anæmia of the brain is no longer tenable; for it has been found that the quantity of blood circulating in the brain, in the normal state of the organism, depends upon the activity of the brain, increasing in proportion to the exercise of the mental functions, and abating when the mind is quiescent. Little blood being required during the dormancy of the mental functions, the brain is comparatively bloodless, and, if open to inspection, presents a very pale appearance.

But if the brain is anæmic during normal sleep, will not cerebral anæmia, produced artificially, be followed by sleep? Of this there can be no doubt, since it has been shown experimentally that compression of the large arteries supplying the brain is speedily productive of unconsciousness. Hence, if hypnotics should cause contraction of the cerebral vessels and thus produce anæmia, sleep would necessarily ensue. But in recent experiments on animals, whose skulls had been trephined so that the brain could be inspected, it was found that hypnotics may induce deep sleep without in the least altering the quantity of blood circulating in the brain.

Usually, when the sleep was prolonged, the brain gradually became pale and comparatively bloodless. The absence of cerebral anæmia during the early part of artificial sleep disproves the theory that hypnotics act indirectly through the vaso-motor system.

The fact that hypnotics may induce sleep without at first altering the quantity of blood in the brain gave rise to the more recent theory that they act directly on the cerebral cells. The nature of this action is unknown. Experiments performed by Binz seem to show that it may be attended by a very slight and transient coagulation of the protoplasm of the cerebral cells. That some decided, though not very durable, change of the cortical substance of the brain is produced is evident from the experiments of Albertoni, in which it was found that in dogs large doses of bromide of potassium reduced the excitability of the motor centres so much that electric irritation no longer caused epileptic convulsions. In some instances the brain was pale, but in others no diminution of the quantity of blood was observed, and hence the lessened excitability was not attributable to anæmia. Recently the theory has been advanced that natural sleep results from contraction of the protoplasmic processes of the cortical neurons.

The use of hypnotics is indicated, as a rule, when insomnia is continuous, and hence a source of danger; this sometimes occurs both in acute and in chronic diseases. Generally, normal sleep returns as soon as the causes of the insomnia are removed; but sometimes it is impossible to remove the causes, or sleeplessness persists after the removal of all apparent causes.

OPIMUM and its preparations, in appropriate doses, usually induce sleep in one or two hours. In some cases of wakefulness, half a grain is followed by this effect; in others as much as two or three grains are required. The duration of the sleep varies from half an hour to six or eight hours, the variations depending upon the size of the dose, the time of administration, the nature of the cause of the insomnia, and the susceptibility of the patient. Given in the early part of the day, even large doses may act only for a short time; but in the evening, moderate doses often produce prolonged rest. When sleeplessness is caused by peripheral irritation of moderate intensity, small doses may induce continuous normal sleep; but when there exists intense pain, large doses are required, and sometimes must be repeated several times. Patients vary greatly in their susceptibility to the action of opium. In early childhood, especially in infancy, and in old age, moderate doses sometimes cause profound sleep bordering on coma.

The hypnotic action of opium is usually preceded and followed by numerous incidental effects. In many patients phenomena supervene, within half an hour after the ingestion of the medicine, which are due, perhaps, to a stimulant action on the brain—a free and copious flow of ideas, and an agreeable sense of well-being, followed soon by indifference to all external impressions and a feeling of fatigue. In very excitable patients, especially nervous females, there often occurs very notable mental excitement with hallucinations, and sometimes increased wakefulness and delirium. Some patients, on the contrary, particularly robust, strong men, do not manifest any of these phenomena, but are soon lost in a prolonged, quiet, and refreshing sleep.

The pulse, in from fifteen to thirty minutes after the hypnotic dose is taken, becomes accelerated by some six or eight beats in a minute, but falls again to its previous rate before sleep ensues. During the sleep, if the dose has not been excessive, it does not unusually differ from its rate in normal sleep. Simultaneously with the acceleration of the pulse the skin becomes warm and moist, and the mouth dry.

After awaking the patient often complains of headache and fatigue, his appetite is diminished, and his bowels are constipated. Some patients suffer from nausea and vomiting, severe headache, and mental depression. If the hypnotic is taken repeatedly for some days, there often occur dysuria and itching of the skin.

During the sleep the patient may be readily wakened, unless the dose was excessive, when the sleep may be more profound. Then the pulse usually becomes slower, feeble, and sometimes irregular; the respirations diminish in frequency and depth, and may be stertorous; and the face becomes pale, moist, and cyanotic. The pupils are strongly contracted, unless the respiratory process is so depressed that asphyxia supervenes.

If continuously employed, opium soon loses its hypnotic action in ordinary doses.

Morphine.—The hypnotic action of the salts of morphine is identical with that of opium. In appropriate doses, administered internally, they induce sleep in about one hour. But this effect generally ensues sooner when they are injected into the subcutaneous connective tissue—often in from ten to thirty minutes.

The incidental phenomena do not differ notably from those produced by opium. Sometimes the pulse at first becomes slightly accelerated; more frequently it is not influenced at all, especially in healthy persons. In careful observations on healthy young men, Preissdörfer found no change, either in the frequency or in the tension of the pulse, after subcutaneous injections of quantities varying from one-sixth to one-half of a grain.

It is generally held that morphine produces less constipation than opium, but that it is more frequently followed by itching of the skin, dysuria, and, when administered by the mouth, nausea and vomiting.

In some patients subcutaneous injections of morphine speedily cause giddiness, headache, faintness, difficult

breathing, trembling of the extremities, nausea, and vomiting.

Some persons experience only the useful hypnotic effect without any disagreeable phenomena, and can take a moderate dose—one-fourth of a grain of sulphate of morphine—night after night, for a considerable period, without loss of appetite, nausea, constipation, dysuria, or itching of the skin.

As a rule, opium or morphine may be used to induce sleep whenever insomnia endangers life or health, if no contraindications exist. They are preferable to other hypnotics when sleeplessness is caused by peripheral irritation, especially pain and cardiac dyspnoea. In such cases they act both indirectly and directly—indirectly, by removing or relieving the abnormal sensations which cause insomnia; and directly, by arresting the functional activity of the brain.

The utility of morphine in the wakefulness caused by cardiac dyspnoea has long been recognized. Allbutt and Ringer strongly recommend hypodermic injections as speedily effective in allaying the dyspnoea and inducing refreshing sleep. It is necessary, however, carefully to distinguish cardiac dyspnoea from the form of dyspnoea occurring in diseases of the air passages and lungs. According to the experiments of Filehne the immediate cause of cardiac dyspnoea is not an excess of venous blood, but a defect of arterial blood in the medulla oblongata. The medulla is excitable because it is anæmic. All heart diseases that markedly interfere with the circulation, such as valvular affections, dilatation, and pericardial effusion, cause the medulla oblongata to be insufficiently supplied with arterial blood, and hence render it excitable. The dyspnoea that results is wholly useless, as it cannot improve the heart's action; and is harmful in so far as it exhausts the strength. Morphine, therefore, should be employed in doses that will restore the breathing to the normal type. But it is otherwise when dyspnoea results in consequence of impeded arterialization of the blood in the lungs. The immediate cause of the dyspnoea is the excess of venous blood in the medulla oblongata. In consequence of the rapid breathing a larger quantity of blood becomes oxygenated in the lungs; the dyspnoea is, therefore, compensatory and absolutely necessary. Morphine, by diminishing the excitability of the respiratory centre, would increase the venosity of the blood and endanger life.

Opium and morphine are generally preferable to other hypnotics to relieve the sleeplessness occurring in the latter stage of febrile diseases, and depending upon an exhausted and anæmic condition of the brain.

Opium and morphine are contraindicated in wakefulness caused by cerebral hyperæmia. During the first stage of action they probably increase the amount of blood in the brain, and hence are apt to aggravate already existing hyperæmia. They are contraindicated in the wakefulness caused by dyspnoea, if the difficult and rapid breathing is necessary to compensate for some impediment to the interchange of gases in the lungs.

On account of the extreme susceptibility of children to the narcotic action of opium and morphine, these hypnotics are rarely employed to relieve insomnia during the first two or three years of life.

In all forms of chronic insomnia, if it be necessary to maintain a good state of nutrition, opium and morphine are contraindicated, unless it be found that they do not interfere with digestion.

The average dose of opium for adults is one grain, or an equivalent quantity of one of its preparations. As a rule, the dose should be given shortly before bedtime, and, if necessary, repeated in an hour. In cases of sleeplessness from pain and cardiac dyspnoea, smaller doses frequently induce sleep; but when these symptoms are very intense, it is often necessary to repeat the average dose several times.

The average dose of morphine is one-fourth of a grain. In many cases of wakefulness smaller doses suffice, if given at the usual bed-hour. The vomiting that sometimes results from hypnotic doses may usually be pre-

vented by dissolving the salt in four to six drachms of water, and giving a teaspoonful of the solution at intervals of ten minutes.

Frequently morphine is administered by the hypodermic method in cases of insomnia due to pain or dyspnoea. Usually, at first not more than one-sixth of a grain is required to give relief and induce sleep. In the latter stage of acute diseases, when wakefulness is due to exhaustion, the hypodermic dose, as a rule, should not exceed from one-twelfth to one-eighth of a grain. In order to prevent as much as possible the disagreeable effects of morphine on the stomach and skin, it is customary to associate with it a very small quantity of atropine, about gr. $\frac{1}{16}$.

Codeine.—This alkaloid is a less powerful and certain hypnotic than morphine, but has been recommended as preferable to the latter when insomnia results from cough, rheumatic pains, and cancer. The quantity required to induce sleep varies greatly, sometimes this effect having resulted from one-fourth of a grain, and in other instances not from one grain repeated several times.

Small doses are usually not followed by severe after-effects, especially not by obstinate constipation. But large doses may cause nausea, vomiting, giddiness, headache, mental dullness, and tremor.

Codeine may be used as a hypnotic instead of morphine when the latter is not well borne, when constipation should be avoided, and when sleeplessness results from cough.

CHLORAL HYDRATE.—In doses of from 1 to 2 gm. (gr. xv.-xxx.) chloral hydrate usually induces sleep in from ten to thirty minutes. The sleep does not differ notably from natural sleep, the pupils being contracted and the pulse and respirations slow and regular. Generally it is quiet, dreamless, and refreshing, and continues for from two to eight hours. The patient may be readily awakened, but usually quickly falls asleep again.

As a rule, no disagreeable effects are noticeable either before or after the sleep. In irritable, weakly patients, however, a stage of excitement may precede the sleep, marked by injection of the face, restlessness, and hallucinations. These phenomena have been observed most frequently after small doses—eight to fifteen grains. After the sleep there may occur slight headache, with fatigue and somnolency. Usually the functions of the alimentary canal are not disturbed, the appetite being good and intestinal peristalsis normal. After prolonged use of chloral, especially if it is taken insufficiently diluted, symptoms of gastric catarrh become manifest. In weakly patients, and in those who have become much enfeebled by chronic diseases, ordinary hypnotic doses may notably depress the vascular system, render the heart's impulse very weak, and the pulse slow, very compressible, and irregular. These effects on the circulatory organs, due to a depressing or paralyzing action on the vaso-motor centre and the cardiac ganglia, become more marked the larger the dose. Hence, when very large quantities are taken—from one to several drachms—the heart's action becomes very feeble, and the pulse extremely weak. As a consequence, the circulation is so languid that the tissues are inadequately supplied with arterial blood, the temperature falls very low, and life may become extinct.

Although sleep usually ensues speedily from hypnotic doses of chloral, it is sometimes delayed for several hours. This is frequently observed after the continued use of the drug, the interval between ingestion and the super-vention of sleep gradually becoming prolonged and marked by some excitement. As a rule, however, chloral in the same dose retains its power of inducing sleep for a long time.

After continued use of chloral very serious effects have been observed, such as erythematous blotches on the face and neck, bloating of the skin, papular eruptions, petechial spots, bedsores, an irritable pulse, severe attacks of dyspnoea, weakness of memory, dullness of intellect, paralysis of muscles, and general marasmus.

As a hypnotic, chloral hydrate presents the advantage of acting speedily and certainly, and not causing

disagreeable after-effects. Its tendency to depress the vaso-motor centre and the heart makes it suitable in wakefulness associated with vascular excitement. It usually acts well in acute rheumatism, scarlatina, peritonitis, metritis, and febrile diseases generally, as well as in cerebral affections.

Chloral is preferable to other hypnotics when sleep should be speedily induced, as in cases of delirium tremens supervening soon after the receipt of a severe surgical injury. Under such circumstances it is sometimes the means of saving life.

In painful affections attended with vascular excitement, moderate doses of morphine are often associated with chloral in order to relieve the pain, as chloral alone has little analgesic power.

Chloral is a valuable hypnotic in the insomnia of children and the aged, as it does not, in appropriate doses, produce inordinate effects.

Chloral may be employed in all cases of insomnia, if no contraindications exist.

On account of its depressing action on the heart, it is contraindicated when this organ is enfeebled in consequence of fatty or other kinds of degeneration, valvular disease, dilatation, or malnutrition in the latter stages of prolonged fevers.

According to some observers, chloral sometimes produces delirium and great depression in diseases which interfere with the respiratory process, such as pneumonia, pleuritis, emphysema, and bronchitis.

Catarrhal and ulcerative affections of the stomach contraindicate the internal administration of chloral. In hysterical patients undue excitement, instead of refreshing sleep, frequently ensues from hypnotic doses.

On account of the varying susceptibility of different individuals to the action of chloral, it is prudent, when giving it to patients whose tolerance is unknown, not to prescribe more than 2 gm. (gr. xxx.), of which one-half may be taken at the usual bed-hour, and the other half, if necessary, an hour later. In states of great cerebral excitement, such as delirium tremens and acute mania, larger doses have been given with advantage—2 gm. (gr. xxx.), repeated several times, if necessary, at intervals of one hour.

As concentrated solutions disorder the stomach, it should always be well diluted with sweetened water or milk. \mathcal{R} Chloral hydratis, 2 gm. (3 ss.); aq. destill., 8 gm. (3 ij.). \mathcal{M} . Sig.: One-half to be taken at bedtime, in a small cup of milk; and the other an hour later, if necessary. \mathcal{R} Chloral hydratis, 2 gm. (3 ss.); syr. aurantii, 15 gm. (3 ss.); aq. menth. pip., 45 gm. (3 ss.). \mathcal{M} . Sig.: Two tablespoonfuls at bedtime; and the rest, if required, an hour later. In cases of insomnia dependent upon pain, a fourth of a grain of sulphate of morphine may be added to either of the above formulae.

If chloral be required as a hypnotic in cases of severe disease of the stomach, it may be administered by rectal injection. Subcutaneous injections of chloral are inappropriate, except perhaps in strychnine poisoning, on account of the severe irritation which results.

BUTYL CHLORAL HYDRATE.—This substance acts like chloral hydrate, inducing quiet and refreshing sleep in from ten to thirty minutes. During the sleep circulation and respiration are normal. It is held that butyl chloral does not depress the vaso-motor centre and the heart as much as chloral hydrate, but that it exerts a more decided anæsthetic effect on the trigeminal nerve.

As a hypnotic it has been recommended in the insomnia associated with diseases of the heart, and with neuralgia of the fifth nerve.

The ordinary dose varies from ten to forty grains. It is best administered in solution with glycerin. \mathcal{R} Butyl chloral hydratis, 4 gm. (3 i.); glycerini, 10 gm. (3 iiss.); aq. destill. ad 60 gm. (3 ij.). \mathcal{M} . Sig.: A tablespoonful every half-hour until sleep ensues.

CHLORALAMIDE, OR CHLORAL-FORMAMIDE.—Chloral-amide was introduced in 1889 by von Mering as a substitute for chloral in cases of insomnia in which the influence of chloral on the organs of circulation should be