cured from the use of gold used barks and strychnia freely at the same time, and yet seemed to think the action of gold was prominent. Another physician used colored water injection as gold and impressed the mind of the patient with the certain effects which would follow. The drink craze subsided and the patient recovered. In many cases under my care, who have been cured in the gold-cure asylums at different times, there is concealed periodicity. The drink symptom is limited, and disappears naturally both with and without drugs. Such cases always make rapid recovery from the use of any drugs, and assert their final cure most positively. They pose as examples and illustrations of the effect of remedies, and the medical man becomes bewildered with the faith of a new discovery of some new effects of drugs. If it is gold or any unusual medicine, he is more convinced. These cases continue cured for irregular intervals, then relapse again and after a drink paroxysm of uncertain duration recover. The first subsidence of the drink storm makes them willing to be treated medically. Or when forcibly taken away and put under treatment they suddenly acquiesce, and after the first few days recover, no matter what is given. This is popularly called the sobering-off process, and in all the quack asylums is limited to four weeks. It is not scientific treatment, but a mere preliminary to the full restoration, which only comes from months and years of medical care. The use of gold in this period would not be a final test, and its virtues could not be known from its supposed effects at this time. There is no gold cure for inebriety. There are no facts to show that gold has any value in this disease. All the assertions and statements concerning gold as a remedy are delusions, and will not bear the test of critical examination.

THE TREATMENT OF INSOMNIA.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1897.

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Insomnia is, of course, only a symptom but, like many other symptoms, it occasionally stands alone as representing some functional disturbance of which we have no other means of information. When we speak of the treatment of insomnia as such, we ought not to include the treatment of the pains or discomforts from various known sources which may keep the patient awake, or of many forms of insanity, of delirium tremens or other kinds of poisoning.

This narrows our limits very much, but at the same time makes the problem more precise. The practitioner or writer, however, does not get rid of its difficulties by these exclusions, for many of the cases which present no other important symptoms, so that the patient has nothing to tell as to his bodily condition except that he can not sleep, are more difficult to manage successfully than one where we can put a finger on some definite disturbance that is a sufficient cause. For the treatment of insomnia does not consist in making a patient sleep for one, two or a dozen nights by the use of drugs, but in getting his brain into such a condition, with or without drugs, that he

goes through the normal, regular alternations of sleep and wakefulness, of cerebral activity and repose, without special assistance but simply as a part of the physiologic functioning of the brain.

The first thing then to be done when one applies for the relief of insomnia, is to determine whether it is insomnia at all in this narrower sense; that is, whether it is not possible to find a cause in some irritation outside of the brain, some disorder of the digestive or circulatory system, some accidental disturbance, which prevents its coming to its normal rest, or whether its abnormal activity is not the accompaniment or precursor of some more defined and perhaps serious form of mental disturbance. The expression sometimes used by patients, that they will go crazy if they can not sleep, is not always to be looked upon as a mere exaggeration, for although fortunately in the great majority of cases it is so, yet the possible warning should not be overlooked. If you find no such specific cause and ask the patient what prevents him from sleeping when the proper time comes, he is likely to answer, "I do not know. I simply can not go to sleep," or else, "I get to thinking and can not stop."

There is no theory of sleep which is thoroughly satisfactory, and it is by far the most probable that the changes in the cerebral circulation which have been observed are the results rather than the causes of diminished activity. Still, those theories which connect the varying conditions of sleeping and waking with the state of the blood-supply to the brain, or even to certain parts of it, and its control by the regulation of the quantity going to other parts or to other organs, make the most useful working hypothesis in many cases of insomnia. But it would be as absurd to expect it to cover all the ground and to stand the test of therapeutics in every direction as it would be to look for exactly the same conditions in every case of paralysis, or neuralgia, or tremor. That the surface of the cerebral hemispheres is usually in a condition of relative anemia in normal sleep and also, as a natural consequence, that other parts of the body and in particular the skin, as recently shown by Howell, are apt to contain more than the usual amount of blood, are tolerably well established facts. But congestion of the brain, although certainly not a condition of normal sleep, produces symptoms not very different from it, and on the other hand, cerebral anemia, whether as a part of general anemia or only local, gives rise to symptoms just as far from normal sleep as those dependent upon an opposite condition of the blood supply. It is probably just as true in insomnia as in many other visceral states, that the demands of the nervous centers regulate the supply of blood, rather than that their activity is dependent solely upon vasomotor conditions which are themselves independent of the needs of the tissues.

So far as the action of drugs may throw some light upon the relation of vascular tension to sleep, there is certainly an approach to the rule that many of those drugs which tend to relax it, like alcohol and chloral, are also under favorable circumstances, hypnotics, while those which raise the general tension, like the theine group and cocain, are decidedly promotive of wakefulness. But there are so many exceptions, and the hypnotic and vasomotor effects are sometimes so distinctly separate, that it is not very easy to suppose that the relation of causation is an invariable or very close one.

[NOTE.—A paper, of which this is to some extent a revision, was read to the Section on Therapeutics of the British Medical Association at Montreal and published in the British Medical Journal for Oct. 2, 1897, as having been read by Dr. R. Ferguson of Western University. The error was corrected in the index of the volume but, notwithstanding several notifications, not in the text of any succeeding number.]

Digitalis, which raises the general tension more persistently than almost any other drug, does not specially tend to wakefulness. The nitrites, which diminish it extremely and with a rapidity varying according to the basic combination, are not hypnotics, and in particular the amyl salt, which produces vasomotor paralysis with such extreme rapidity that we might reasonably expect it to be not merely a hypnotic but an anesthetic, has no such effect in its early stages when the paralyzant action is at its height.

Aconite, which in poisonous doses is such an extreme paralyzant of the circulation, is not a hypnotic. Even in the instances where moderate vascular relaxation and drowsiness are among the consequences of the action of the same drug, the relation in point of time may not be a close one. Chloral, which even in small doses is not only among the most certain but the most prompt hypnotics, produces an initial rise which does not pass into depression until a later stage or with larger doses. Alcohol, on the contrary, produces a speedy vasomotor paralysis of the superficial vessels, as may be seen in the flushed face and general moisture of the skin, at a time when the brain, especially in its motor functions, is in most rapid, if not most accurate, activity.

Of course, it is possible, by assuming in some cases an alternation of cerebral and general vascular tension and in others a coincidence, to reconcile some of these apparent contradictions with the general theory of sleep as due to cerebral anemia, but this assumption, which even if possible or probable is certainly unproven and capricious in its application, can not be regarded as at all satisfactory. Waking and sleeping undoubtedly indicate the normal rhythm of cerebral nutrition, the alternation of waste and repair in the nervous substance itself.

The rhythmic curve is a function of several variables and probably not identical in form in all individuals. One of the most important of these is undoubtedly the condition of the cerebral circulation as controlling the supply of nutritive material and also the balance of pressure between the blood and nervous protoplasm. Beside this, however, there are two laws of nervous activity, partly dependent on each other and partly opposed, which are probably not controlled by the condition of the circulation, at least, that is, when it varies only within the usual limits: 1, the tendency of nervous force to discharge itself along the same paths with constantly increasing ease, i. e., the formation of habitual associations of ideas and movements; 2, the tendency to rhythmic action, i. e., excess of expenditure over income during a certain time to be made up by accumulation during rest.

If we have the first of these, as applied to the attention or to some limited center of cerebral activity, gaining the ascendancy over the second, so that the action does not cease at the end of the proper time when the reserve of energy is running low or become transferred in a lower grade to some other region (sleep with dreaming), we have insomnia, which is only slightly affected by the condition of the blood supply.

In treatment of chronic insomnia, in the first place a normal and sufficient general nutrition is to be looked out for as the basis for normal cerebral nutrition, but this does not necessarily imply the stuffing process. A useful criterion is the body weight in reference to

the height and usual or normal condition of the individual, and diet is to be regulated on this basis. Secondly, the distribution of the blood is to be equalized, with the balance however tending to anemia of the brain rather than the reverse, though by no means to the extreme. The derivation of blood may be accomplished by hot baths to the feet, or the lower half or even the whole body, emphasized if necessary by a little mustard. The well-known expedient of a small amount of easily digestible food just on going to bed or on waking up in the course of the night, probably acts to a considerable extent, at least, in the same way. The hot toddy, which also keeps coming up in the papers as a new discovery, adds to a slight direct narcotic effect the early vasomotor dilating action of alcohol.

Another illustration of the same influence is to be found in the intense drowsiness that comes over one who has been for a long time in the cold and who sits down in front of a cheerful fire, when the blood previously driven to the interior of the body flows outward again as the arterioles dilate.

Cold feet are often an accompaniment or partial cause of insomnia, and it is well to promote the circulation in them by a hot bath for five minutes, followed by a short cold douche and friction, rather than to simply attempt to warm them by hot bottles and the like. The cold pack is a more extensive application. Two methods described by Dr. McAllister at Montreal, as useful in the case of students unable to sleep while cramming for examinations, undoubtedly owe their power to the production of a general vasomotor reaction following the brief superficial application of cold. The first of these was the very simple plan of parading the room absolutely naked, and the second, wringing out the night-shirt in cold water and resuming it with the addition of a sweater.

There seems to be a certain medium degree of activity in the cerebral circulation necessary for normal sleep, and it might be expected that it would be so. On the one hand the production and discharge of nervous force, resulting in cerebral activity and wakefulness, can hardly be prevented while the neurons are being bathed by a rushing current of highly arterialized blood. On the other, sleep is not simply and solely a condition of exhaustion. It is the preparation for waking activity and the occasion in which the storage of potential energy for future use must for the most part take place. This of course can not be accomplished unless the cells have presented to them a supply of nutriment for building up again their wasted structure. The promotion of the general nutrition is of great value in the treatment of insomnia, especially of the chronic form. Sometimes it is sufficient without the introduction of any more specific measures in restoring the normal function. But while it is necessary that suitable nerve food should be prepared in due quantity and delivered, speaking both literally and figuratively, under due pressure, yet a third condition is quite as essential, namely, that the nerve centers themselves shall have the power properly to dispose of it, that is, absorb and store it. People lie awake when the extremities, the skin, the viscera, so far as any one can judge, are properly supplied with blood, and when everything seems conducive to its orderly distribution; everything, that is, except the condition of the brain itself. Either an excitement which can not be abated or an excitability which makes slight disturbances into great ones

drives away repose, and an active congestion is the result of the too long continued demand upon the brain, or, much more probably and usually, upon some quite limited portion of it which is the center of disturbance and prevents the repose of the whole.

A brain in perfect health arrives gradually at a condition of fatigue which more or less peremptorily compels sleep, and the more so the longer the period of deprivation. But sometimes the brain or some part of it does not follow the laws of fatigue and is capable of working, or rather insists upon working, in the same direction it was following when work should have ceased. The rate of production is undoubtedly low and in most cases, so far as any useful thinking is concerned, none at all, but the condition is not one of rest. It is much as we might imagine would be the case in a mill somewhat worn and with a water supply insufficient for continuous working, if the gate got out of order so that the pond could not fill up. Then a little stream of water, not enough to grind any corn, might keep the wheels moving and prevent proper repairs or the accumulation of enough power to do any good. The proper thing to do in such a case is obviously to fix the gate in complete order, but if this for any reason can not be done, it may be proper to stuff it full with something or other to save the water and stop the mill for repairs. When the current of wearing thoughts will not stop, we may occasionally stuff the gate with hypnotics.

Cases where sleeplessness results from adequate causes—pain, discomfort or extreme sensory irritation, bright lights, loud noises—are hardly to be reckoned true insomnia at all, but the line which separates the adequate from the trivial varies greatly according to the makeup of the individual, and in the same person at different times. The psychic element is very distinctly shown in the great diversity of effect produced by disturbances according to the mental attitude of the would-be sleeper. A noise which he considers perfectly legitimate or for which he feels no responsibility is much less likely to keep him awake than those which come closer to his sense of the fitness of things or his personal feelings, though in themselves no worse in respect to loudness or quality; like that of the absurd dog who bays the moon, or the neighborly cough for which he has himself prescribed ineffectually, or the single mosquito he has made up his mind to kill. This is not the same state of things as is investigated by the psychologists, who take the loudness of the noise (dropping of a ball) necessary to awaken the sleeper as a measure of the soundness of the sleep.

Cases have been observed where, several of the senses being wanting, a temporary stoppage of the channels of the remaining one has resulted in sleep within a few moments, but it is a very common observation that noises which are continuous and to which one has become accustomed, and for which he no longer waits, cease to have any effect upon a sleeper except on their sudden cessation, which then acts as the irritant. It is necessary to bring the *attention* to rest.

That a certain thin streak of waking consciousness may be made to run through the sleeping condition, perhaps always to some extent does so, is shown by the ease with which many persons can wake up at a predetermined hour.

It is probable that the sensible fatigue of mental labor depends not so much on actual cerebration, the

association of ideas, as in forcing the work to continue in certain definite directions without regard to outside distractions. After a time this becomes more and more difficult, and stronger and stronger irritants are necessary to retain the attention. Thus we have under normal conditions the soothing effect of monotonous repetitions as of music, the prosy speaker, the more or less intentional hypnotist. In normally going to sleep the attention, either because too much fatigued to act longer or failing to receive adequate stimuli from without, ceases to exercise its control in co-ordinating the intelligence received from the special senses and from the various departments of the brain. Cerebration dissociates itself from the recent memory and from the data of sight, hearing and feeling, as they are rapidly becoming blunted. Definite thinking becomes dreaming. Probably every one has noticed in himself the process of going to sleep carefully enough to know that the rapidity of the coming on of full sleep varies greatly, and while one may, as the phrase goes, drop to sleep as soon as the head touches the pillow, there is usually an interval in which real impressions are mixed with the images of dreams, and even in quite sound sleep the current of the dreams is more or less influenced by bodily sensations. Attention should be withdrawn, if possible, from habitual disturbing and anxious thought, not just *at* bedtime, but *before* it, and the interval should be employed in some entirely different occupation.

True insomnia, as distinguished from an interference with sleep by special somatic causes, seems to consist largely in the attention refusing more or less absolutely to surrender its directing and controlling power over the action of the brain. Perhaps the associational centers of Flechsig may, by too long-continued and intense activity without rest, or a current of ideas confined within narrow and monotonous limits, get into a condition analogous to that of the motor centers in writer's cramp or chorea.

The products of a partially exhausted cerebral activity, which should be allowed to float vague and purposeless, calling for an expenditure of energy much less than the nervous tissue is capable of reacquiring during the same time, are still more or less held together and intensified, so that the potential energy of the nerve centers is drained away as rapidly as it accumulates, the output exceeds the income, the patient gets but little rest, and arises unrefreshed. It may be remarked, however, that the effect of two or three nights of this form of insomnia is less absolutely and thoroughly exhausting than the same period of enforced wakefulness under great pressure, as for instance, that of a sentry, a nurse, or an engine-driver working overtime, although the latter may occasionally pass into the former, as an acute disease into a chronic.

A purely experimental want of sleep produced by constantly waking the persons experimented upon, although to be sure assisted as far as possible by themselves, seems to have produced singularly little disturbance in nervous or cerebral function, and to have been recovered from with an amount of extra sleep much less than that lost, varying from 16 to 35 per cent.¹ In these cases, however, the mental strain in the form of anxiety or responsibility was almost *nil*, and it is not difficult to understand how the effect upon the reserve supply of nerve force may have been correspondingly less.

¹ G. W. Patrick and J. Allen Gilbert. *Psychological Review*, Sept., 1896.

A plan sometimes resorted to in desperation by victims of insomnia, that of producing great bodily fatigue, as for instance by a walk far beyond the usual habit or ability, is an extremely bad one and usually fails entirely of its object. As with the circulation, a certain medium degree of fatigue is required for the best kind of sleep, and if increasing the burden is to be of value, it must be shifted so as to moderately fatigue new portions of the brain, and not deepen the old ruts from which it is already too difficult to dislodge the current of the thoughts. Mere labor which fatigues the muscles without engaging the attention in something outside the fixed and disturbing current of associations does not fulfil this indication.

At Montreal, Dr. Learned of Northampton suggested successive series of slight movements of separate groups of muscles, raising the head from the pillow a certain number of times, then one arm, one foot, and so on, is much nearer to the object sought, since it requires a certain amount of mental effort and attention to carry out the plan properly, and when the proper point is reached the patient is already in bed to avail himself of it. Reading one's self to sleep with a suitable book is a common and commendable device. The book, however, is not a matter of indifference. It should not be at all in the direction of one's anxious daily occupations, nor sufficiently exciting to set up a train of thought intense enough to be itself a cause of wakefulness and, on the other hand, it must have enough interest to take the mind away from the previous one. Probably nothing could be more valuable and efficient, were it generally available, than music, which would, however, require a delicacy of adaptation to the individual case that would greatly interfere with its practical applicability.

The prescription most frequently made for chronic insomnia, and in most cases undoubtedly the best, is that of complete rest or a vacation, recommendations more easily given than taken. Absolute vacancy of mind is talked about but never artificially attained, and relief from mental activity means relief from the habitual train of thought, most probably of a depressing or anxious character. It is specially difficult to obtain the proper conditions at home or among familiar surroundings.

A vacation in the country, real country if it can be had, is by far the best method of getting the necessary diversion, but here also there is a choice. The disturbances which drive away sleep come from within, and the occupation of the vacation must be such as will displace morbid activities by healthy ones, not intense but sufficient to predominate. If the patient has nothing else to think about he will be sure to think about his troubles. Black care may sit behind the horseman or beside the lounge on the hotel piazza. Of course the morbid train of thought may be difficult or even impossible to displace at once, but life in the woods, with adventure enough to command the attention of the invalid in an entirely different direction, is as likely to do so as anything. The psychic as well as the physical atmosphere must be changed. A well-founded doubt as to whether the patient is going to find any place to sleep at all is a useful counterirritant to the harrowing dread that he may not sleep after he gets there.

In cases not insane, the haunting idea which stands in the way of satisfactory sleep is likely to be the fear that it will not come, or the feeling of doubt, anxiety and despair when it is long awaited in vain. Insom-

nia and the dread of it react to heighten each other's intensity. Under ordinary circumstances it is better that all thought in regard to sleep, even a slight expectation of it, should be banished from the mind, unless of course it be so firmly believed in that the element of doubt no longer exists. "Sleep, like the other gods, comes when we least expect him." When this idea has been banished a great step has been taken. Suggestion, as it is mildly called, not dependent upon hypnotism and varying from the gentlest of hints to the most positive asseverations, is by no means certain of ridding the patient of this dread, and it must very often be backed up with a dose of something. Patients, even when they are strongly suspicious, or even when it is acknowledged that the medicine ordered will not be a powerful one, are reluctant to have it omitted altogether and be left to their own resources.

A placebo or half placebo, as some of the mild hypnotics, and even some of the others when given in very small doses, may be called, ought always to have a reputation behind it, whether deserved or not, if there is any chance of the name becoming known, lest a highly intelligent patient, as such patients are apt to be, or an officious nurse, should look it up in a medical dictionary, which for practical purposes, whatever doubts may be justifiable from a scientific point of view, should give out no uncertain sound. Hence part at least of the value of lactucarium, lupulin and the hop-pillow. The knowledge that a powder is lying on the chimney-piece, or the assurance that a provisional order will be left on the night-nurse's book, has a tranquilizing effect highly desirable.

A graduated series of powders, with sugar of milk to maintain the bulk, and enough quinin to maintain the taste, beginning with a full dose of sulphonal and ending with none of it, is a convenient way of ridding the patient of the drug habit without the disturbing apprehension consequent upon the brusque statement that he must get along as best he can without any drug.

Hypnotics may be roughly divided into two classes: Those which diminish the nervous irritability which keeps the patient awake, and those which distinctly, though perhaps not profoundly, narcotize the nervous centers.

The most typical of the first class are the bromids, among which I have never abandoned my preference for the potassium salt as the most powerful, believing that the fear of any depressing effect of the basic element upon the heart is purely imaginary, at least in such doses as ought to be or are likely to be used in the treatment of insomnia. The bromids are better given in two or three doses during the latter part of the day, and in many chronic cases through the day, than in a single large one, although in my own person the latter plan has worked well also. In cases where a good deal of nervous excitability and restlessness during the day, "nervousness" par excellence, is added to the insomnia, a bromization lasting a few days or a week or two is occasionally admissible. The bromid of potassium, under circumstances demanding mental activity, even in considerable doses, is not a distinct hypnotic, although, when given in the way I have suggested, it will allow a patient to sleep if it does not make him do so. I think the same is true of its action when given with narcotics that are liable by themselves to produce an excitant effect. Opium or cannabis indica may be converted by it from an excitant to a sedative. I have taken a single dose of more than one hundred grains of bromid for the purpose

of having its effect on my retinal circulation examined by one of my ophthalmic colleagues, and then made my hospital visit without the consciousness of anything unusual in my mental condition, or any remarkable degree of somnolence perceptible, so far as I was aware, to my internes. Yet such a dose in the evening would have given me a quiet night if undisturbed, and I have no doubt, if I could have yielded to it, would have done the same thing in the daytime. Opium, with its alkaloid, morphin, the first of narcotics, notwithstanding its undoubted power, its traditional *vis dormitiva* and the fact that sleep usually follows a sufficient dose after a varying interval, is not a desirable hypnotic in the strict sense of the word. In small doses it is untrustworthy, in many persons having the reverse of the desired effect, while in large ones its disadvantages far outweigh its benefits. Where, however, the want of sleep is dependent upon pain, the case is entirely different. It would be peculiarly dangerous in a case of neurasthenia, and I can hardly think of circumstances which would justify its use in a case of pure insomnia. Cannabis indica is hardly a hypnotic at all alone, or at least takes a long time to produce real sleep, but often does well in combination with bromid. I have used it occasionally alone with good effect when the dreams were depressing or annoying with the result, or coincidence, of their changing their character for the better.

Chloral, I think, has gone largely out of use. Introduced as an anesthetic, then freely used in quite large doses as a hypnotic, it has been to a great extent abandoned for safer if less powerful drugs, and I judge from the catalogues of drugs given me by patients that my opinion of its danger and uncertainty is shared by other physicians, though under the misnomer of "bromidia," which seems to obscure even in the professional mind the exact character of the preparation, it often appears upon the list of the narcotic "fiend." Of the immense number of other hypnotics of recent introduction, mostly of coal-tar or alcoholic origin, each of which has in turn been brought forward as agreeable, certain and free from danger or disagreeable after-effects, I will only mention three.

I do not believe that the hypnotic is yet discovered or ever will be, which is at once trustworthy as producing the desired result and incapable of producing any unpleasant after-effects. Sulphonal comes as near to that standard as any drug with which I am acquainted, and used with care is little likely to do harm except that which attaches to any habit of the kind or dependence upon artificial aids to sleep. Nearly all, perhaps all, the cases, which, considering its widespread use, are not numerous, where dangerous conditions as evidenced either by hematuria or by long-continued subnarcotic effects have arisen, are the results either of doses singly too large or administered too close together, not allowing the blood to be free from it in the interval. The same remark might undoubtedly be made of other hypnotics. Its correctness may be shown by reference to the discussion at the Montreal meeting.

The tardiness and permanency of the action of sulphonal, undoubtedly a consequence of its difficult solubility and slow absorption, can not be looked upon as a disadvantage when properly allowed for. A second good night without a renewal of the dose, is by no means an exceptional occurrence even when the dose has not been excessive. It seldom fails in the dose of one gram if given well dissolved and early enough

in the evening. In dose of thirty centigrams or less it is somewhat of a semiplacbo. The full dose should not be repeated on the same night, and it should not be given continuously, that is upon successive nights, for any length of time. If its use is to be prolonged beyond an emergency period of four or five days the interval should be more than forty-eight hours.

Trional is more soluble and rapid in its action, but seems to enjoy most of the advantages of sulphonal except the important one of having its effect last over two nights.

The peculiarities of each may be best utilized by reserving the sulphonal for a patient who has not slept for several nights and who, it is pretty clear, is not going to get a good night unassisted, so that the medicine may be given early, namely, at 6 or 7 P.M., in order that its effect may be developed at the regular time for going to sleep. Trional, on the other hand, may be kept for a case where sleep is likely to be well begun, but where it is likely to be broken off very early in the night and not renewed without a hypnotic. It is the preferable of the two for a provisional prescription, since the dose may be given at any time in the night necessary and the effect will not be too far distant. Paraldehyde is a rapidly acting and safe narcotic, probably coming much closer in its mode of action to alcohol than the coal-tar preparations. I have seen a case closely resembling a mild delirium tremens from the continued use of the drug in the hands of a patient not under professional care. The extremely disagreeable taste and smell may or may not be an advantage according to circumstances.

THE CONTINUOUS USE OF DIGITALIN IN THE VASOMOTOR AND CARDIAC LESIONS OF SENILITY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Senility embraces that period of life during which one or more of the functions, as well as nutritional metamorphoses, when compared with the manifestations of the vital unit possessed by the individual, are recognized to be prematurely waning, and thus many are the instances of men and women, who, being endowed with vital energy sufficient to enroll them among the normal activities of advanced being, remain more or less disabled or invalided because of this premature failure on the part of some special organ or system to adequately discharge function. This retrograde process has an insidious origin, manifesting itself much earlier in life than we are prone to imagine, and is primarily operative, as a rule, in the vasomotor system. This *great* system has *not*, as yet, received the attentive study it should, and its direct relationship to functional activity, whether it be of brain or special sense or organ, is such that it is not an exaggeration to state that life itself depends thereon.

Active nutrition, then, in the fullest sense of the term, is that condition which determines the normal relationship of function to vital unit and is intimately associated with the perfect fulfillment of vasomotor function, because the distribution of pabulum to each cell, organ and system is directly dependent upon the