week afterward treating them with auri et sodii chloridum, limiting the lesion to the seat of the inoculation; second by putting healthy animals under treatment for one or two weeks before inoculation, and thereby preventing in these even the formation of an abscess at the seat of inoculation.

The elimination of gold and sodium chlorid takes place principally by kidneys and, to a small extent, by liver and bowels. There is an astonishing amount of skepticism in the profession as to this drug. Some of this, at least, arises from the fact that it is very unstable, being readily decomposed by light and organic matter. Sufficient care is not exercised in its combination with other drugs, or too large a quantity is ordered, so that decomposition has taken place before its ingestion, or its administration is not properly timed, so that destruction takes place in the stomach. The best vehicle with which to combine it in capsule is tragacantha or guaiac resina; neither of these decomposes it. The time for administration should be one hour after eating, or, better still, one hour before eating. The ideal method for administration is by hypodermatic injection, the solution used being made with equal parts aqua destillata and glycerina.

Syphilis.—The remedy is useful in syphilis, especially in those cases in which the iodid and mercurials do not agree, or in which there is a great amount of debility. Dr. E. F. Ingals (*Diseases Chest and Throat*, page 448) recommends it in syphilitic laryngitis. M. Martineau (*Bull. et Min. de la sac, de la Therap.*, April 30, 1883) recommends it in cases of inveterate syphilis. One of his cases, a woman in an advanced state of cachexia, broke her fibula, probably because of specific change in the bone. Though rebellious to other treatment, she recovered quickly and the fracture united readily under gold treatment. W. Hale White (*Mat. Med. and Therap.*, Wilcox, 2d Ed., p. 187) says it is a valuable remedy in the tertiary manifestations of syphilis, especially of the bones, and presents fewer disadvantages than does the corrosive mercuric chlorid. Shoemaker (*Mat. Med. and Ther.*, 3d, Ed., p. 226) and Potter (*Mat. Med., Pharmacy and Therap.*, 3d Ed., p. 123) both emphatically endorse it for the treatment of syphilis in its later manifestations.

The drug is useful in the treatment of connective tissue hyperplasia, as in cirrhosis of the liver, interstitial nephritis, arteriosclerosis, and the spinal sclerosis. Millard (*Bright's Disease*, p. 220) writes: "The chlorid of gold has proved of great value in interstitial nephritis. Under its use I have often known the albumin to diminish and disappear;" and again, "At all events its usefulness in chronic nephritis has sometimes been unmistakable, and it is likely to prove still more useful if the patient suffers, as is usual, from nervous symptoms, hypochondriasis, irritability, vertigo, etc." Bartholow (*Practice of Medicine*, p. 400) writes, anent topic interstitial nephritis: "Better results even, the author believes, are procured from the careful and persistent administration of the chlorid of gold, or of gold and sodium." Baumgarten (*Reference Handbook Medical Sciences*, Vol. iv, p. 282) writes (referring to Dana, *Boston Medical and Surgical Journal*, Oct. 24, 1883) under "Contracted Kidney": "Marked improvement and mitigation of distressing nervous symptoms have been observed from the use of chlorid of gold and sodium (0.005=1/12 gr.) in pill after each meal. Culbertson

(*Am. Jour. Oph.*, July, 1894) relates a case of albuminuric retinitis relieved by chlorid of gold and sodium. W. H. Walling (*Medical and Surgical Reporter*, Philadelphia, 1897, Vol. lxxvi), writing of sclerosis generally: "I will state my belief, founded on an experience of twenty years, that gold is far more efficient than any other drug I know of."

My first experience in the use of this remedy in interstitial nephritis was about fifteen years ago. The case came under my treatment because uremic symptoms had developed after severe exposure. When these acute symptoms disappeared he was given chlorid of gold and sodium, and he continued it in varying doses for five years, the albumin gradually diminishing and finally disappearing. Several examinations of the urine were made five years ago and no casts or albumin were found. I am sure that I have also repeatedly seen advantage from its use in the early stage of posterior and combined spinal sclerosis.

Diabetes mellitus.—J. A. Robison (*Chicago Medical Recorder*, May, 1891) reports two cases of diabetes mellitus cured by its use. A recent communication from Dr. Robison informs me that these cases continue well and that an equally favorable result has been reached in other cases.

Functional diseases of the nervous system.—Niemeyer (*Text Book Prac. Medicine*, p. 386) writes: "I have accidentally hit upon a nervine of great efficacy in hysteria and have made use of it with signal effect in many cases." The formula he recommends is:

R. Auri et sodii chloridi 0.30 gm. (gr. v)
Gummi tragacanth 4.00 gm. (dr. 1)
Sacch. alb. q. s. ft. in pil. No. 40.

Sig. Begin with two pills a day, increased to eight pills daily.

Mills (*The Nervous System and its Diseases*, p. 238) writes: "Sodium and gold chlorid, although it has attained an unmerited reputation in some directions, is a valuable tonic, and I not infrequently use it in the treatment of hysteria and other affections."

My personal experience is in accord with these great clinicians, and I especially desire to emphasize its value in that complexus of symptoms called neurasthenia.

Tuberculosis.—Gibbs and Shurley (*Therapeutic Gazette*, April 15, 1891) report twenty-seven cases of pulmonary tuberculosis treated with the drug, used hypodermatically, in doses 0.003 gm.—.001 gm. (1/20 gr.—1/6 gr.) during three to eight months, with gradual disappearance of temperature and cough, increase in weight, and disappearance of bacilli. Pepper (*Univ. Med. Mag.*, December, 1895) reports a case of phthisis apparently cured by the use of this drug.

GOLD CURES IN INEBRIETY.

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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Any remedy introduced, surrounded by mystery and sustained by falsehood and deception, is unworthy of notice. Yet a number of physicians have expressed confidence in the value of gold as a remedy, both in inebriety and allied brain affections. This theory has been recognized by reputable druggists, who have prepared several preparations of gold for administration chiefly by the needle. The empiric prepara-

tions called "gold cures" whenever analyzed are found to contain no gold whatever. The assertion that no chemist can ever make an analysis of such preparations is absurd. As a medicine gold has been rarely used by the regular profession. In the first century of the Christian era Pliny mentions it only to doubt its value unless taken with large quantities of drink, which destroys its potency for evil. The Arabian physicians for hundreds of years mentioned gold as an elixir of life, believing it of value in renewing youth and prolonging life. This doubtful theory continued and appeared in old works of chemistry down to the last century. No one made a test of it, but simply repeated it in terms of vague doubt. The alchemist charlatans have always been defenders of gold as a remedy. It is a curious repetition of modern experience that at least three much vaunted remedies contained no gold at all. In 1540 Gallus, a physician of Paris, claimed to have a gold cure for syphilis and gave the formula an impossible combination. Glaser, a London doctor in 1663, claimed to have a diaphoretic powder of gold for intermittent fever. This was equally fraudulent and no gold was found in the preparation, although it was used for many years with great popularity. From 1725 to 1780, Lamotte's gold drop was famous throughout Europe and was called a tincture of gold, but contained no gold. Neuman wrote nearly two hundred years ago: "Gold has been held to be possessed of extraordinary medicinal virtues, and many preparations dignified with the name of this precious metal have been imposed on the public, but the virtues ascribed to gold have apparently no other foundation, than credulity and superstition and most of the golden remedies have no gold in them." Even when gold has been employed in their preparation none of it is retained in the product.

Gold is non-assimilable, and its modern use is confined to quacks who trade on the name. The modern craze for gold as a remedy is simply a repetition of charlatans' schemes of the past centuries, who sought to meet and supply the demand for elixirs of life, renewing youth and postponing old age. Croll, a German physician in the sixteenth century, mentions over a hundred different preparations of gold; each if made by the formula would be absolutely free from gold. This was illustrated in the modern gold cures, which from their names were found to be chemically impossibilities. Their value in inebriety depends on credulity. A yellow mixture of some vegetable extracts injected in the arm, followed by general relaxation and diaphoresis so profoundly impressed the inebriate chemist that he has ignored all teaching and experience for the belief that the hidden virtues of this drug have been discovered and will revolutionize pharmacy in the future. I have tried three of the known preparations of gold made by reputable authorities, on cases of inebriety, with no results whatever. When strychnin, cinchona and other remedies were given, associated with gold, the effects were marked. The same results followed when gold was not used. Infusion of cinchona in large doses at frequent intervals resulted in rapid subsidence of the drink craze and a distaste for both the flavor and effect of spirits. Injections of gold were not noticeable for any effects on the taste or desire for spirits. By impressing the mind of the patient with profound conviction of the value of the drug, and detailing the expected results which would follow, and by using colored water the exact effects would appear. In some

cases this impression is so powerful as to materially change the disease. Supposing gold to be used, it must be combined or given with some other drug of pronounced effect on the body, or preceded by expectancy and credulity, to be followed with any results. This would be the same in any other disease of the body; to specialize any effects from the drug alone would be impossible. Inebriety is more than alcoholism; it includes disorders of which the desire for spirits is only a symptom. The real trouble is some central disease of the brain so complex and obscure that no drug or therapeutic agent can reach it specifically. For a quarter of a century a great variety of remedies have been used in inebriety, with the same results as in all other empiric efforts to reach an unknown disorder by remedies whose action was largely unknown. Some drugs like strychnia have some influence in checking the drink symptom, but beyond that nothing is known.

Gold, whose effects are unknown and even to its defenders are surrounded by mystery, can not possibly be of any service in checking an unknown disorder. Its use must be empiric and irrational always, except as a mental remedy to influence the mind. Experience indicates that it is extremely doubtful if any remedy exists for this obscure neurosis of the brain. Combinations of therapeutic measures are valuable and their action marked in many cases, but no single drug can have any curative influence. The checking of the drink symptom is the same as using opium for pain, leaving the cause uninfluenced. On general principles, gold or any single drug can have no specific influence in cases of inebriety and all specifics—either single remedies or combination of remedies—are fraudulent and empiric. Inebriety is not reached by drugs alone or special, concealed plans of treatment. It is a neurosis to be treated as other affections of the brain and nervous system. Even under the most skillful care, with the best appliances known to science, it is often incurable and only temporarily influenced by therapeutic measures. The degenerations which precede and follow the use of alcohol are organic changes of cell and nerve tissue, and restoration is problematic, depending on causes and conditions largely unknown, therefore, the discovery of a remedy to check decay is impossible with our present knowledge of medicine. It will require a century of study and experiment before we can speak positively and authoritatively on the pathology and therapeutics of inebriety. Yet a number of men are confident that drugs are found—or will be soon—to cure and restore the inebriate to health again. This expectation is met in the gold cures, where color and price are accepted as evidence. This, with the hysterical assertions of cure and statements of health, reiterated with great positiveness, becomes a mental contagion difficult to resist by unstable defective alcoholics. The acceptance of this testimony by persons not inebriates is ignorant credulity difficult to explain. Why gold should have any influence in these complex drug neuroses, and not in the more common affections is a mystery; why the use of gold should be confined to irregular and doubtful practitioners is also a mystery. Why should gold be wanting in the preparations said to contain it? Even when present, its combination with powerful drugs makes it difficult to know the value of any one of them, unless the physiologic effects of that drug appear.

A physician who reported ten cases of inebriety

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 cocaine, 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.]