close any change in the internal organs, even when the typical bacilli were found to be present in them.

In the discharge from the ulcers staphylococci, streptococci and various bacilli other than the acid-fast were always seen, but in the unbroken skin, glands and internal organs, when present at all, the leprosy bacilli were unaccompanied by any other organisms. No histologic examinations have been made.

These fourteen rats were captured at five different locations, four of which were within a very few blocks of each other. Six of the fourteen were received in one day from one place. A guinea-pig inoculated subcutaneously over three weeks ago has remained in perfect health, the wound having healed completely. No rats have been inoculated.

The following notes give a good picture of the various stages of the disease as it has come under my observation:

RAT 1.—Adult male *Decumanus*. Large and well-nourished. Hair dull and lifeless in appearance, and thin about the hind-quarters. No nodules or ulcers present. Skin over hind-quarters thickened and indurated, and "smears" from its inner surface show a small number of acid-fast bacilli resembling those of leprosy. Glands not enlarged; no bacilli present. Internal organs apparently normal.

RAT 2.—Large adult male *Decumanus*. Well-nourished; no emaciation. Hair dry and lusterless; very thin on flanks and hind-quarters, entirely absent in places. Several small circular ulcers, penetrating quite deeply into subcutaneous tissues, scattered over hind-quarters. A large scab, thin and dark-red in color, about the size of a dime, over right hip, with slight discharge oozing from one edge. Skin not much thickened. Near the center of the tail, for a distance of about two inches, the skin and soft tissues have been entirely destroyed, leaving the bone exposed. One toe is gone, and another is almost entirely separated from the left hindfoot—possibly due to injury. Appearance of rat very repulsive. Acid-fast bacilli in enormous numbers in "smears" from ulcers and skin. Decomposition too advanced to permit of further examination.

RAT 3.—Adult male *Decumanus*. No emaciation. General alopecia. No distinct nodules. A few small ulcers scattered over body, surrounded by greatly indurated skin. Peripheral glands somewhat enlarged, but not congested. Acid-fast bacilli very abundant in ulcers, skin and glands; a very few found in spleen and liver. Organs appear to be normal.

The all-important question is, of course, the relationship between rat and human leprosy—a question which no one can answer at the present time. The comparatively large number of cases of rat leprosy found in communities in which human leprosy occurs so rarely would seem to indicate that the disease as it appears among the rodents is not transmissible to man, but possibly the contact between man and rat in our present state of civilization is not sufficiently close to permit of infection which, under less sanitary conditions, might take place.

St. Francis Apartments.

INCARCERATED FEMORAL HERNIA, CONTAINING THE VERMIFORM APPENDIX.

ANTONIO M. CRISPIN, M.D.

NEW YORK CITY.

History.—Mrs. A. S., aged 75, living in Hoboken, N. J., came to this city seeking relief for her distressing condition. Patient had had ten children. Her rupture appeared while she was in Europe, and she was operated on there five years ago. The operation gave relief for two years, when the hernia again recurred, but did not give her much trouble because she could easily reduce it. It had grown steadily, and for the last four months she was unable to replace it. At the

time she was seen it caused her much annoyance and pain, especially while walking.

Examination.—A large tumor painful to the touch and about size of a coconut was seen on the right side below Poupart's ligament. Over the tumor there was a linear scar two and a half inches long. As the hernia was incarcerated and there was no hope of reducing it by taxis, I decided to operate. Considering the advanced age of the patient and her weakened condition it was thought best not to use general narcosis, but to employ local anesthesia. She was kept in bed for two days before operation, so as to test her ability to endure recumbency.

Operation.—On Jan. 3, 1908, under cocain anesthesia an incision was made over tumor. Examination of the contents of the sac revealed the presence of an inflamed appendix, five inches long, with the intestines of an ominous looking blackness. To facilitate the reduction and a thorough inspection of the bowel, and to avoid any abnormal vessel in the vicinity, it was necessary to cut upward and inward, thus dividing Gimbernat's ligament. As the appearance of the bowels was suspicious, the incision was carried upward over Poupart's ligament and the intestines freely exposed. The separation of the adhesion was accomplished with some difficulty. The appendix was then tied and resected, the stump being touched with phenol (carbolic acid) followed by alcohol. After satisfying myself that the intestines were not gangrenous, the hernia was reduced, the sac tied by transfixing it, and dropped back into the abdominal cavity. The canal was closed with seven sutures of 40-day No. 4 catgut, suturing from within outward, including the periosteum of the pubes, the pectineal fascia and Poupart's ligament. The recovery was uneventful.

The interesting points in this case are the presence of the appendix in the hernia, an uncommon occurrence, the advanced age of the patient, and the satisfactory result of the local anesthesia.

854 Lexington Avenue.

UNTOWARD RESULTS FROM DIPHTHERIA ANTITOXIN.

WITH SPECIAL REFERENCE TO ITS RELATION TO ASTHMA.

HERBERT F. GILLETTE, M.D.

CUBA, N. Y.

THE JOURNAL, Jan. 25, 1908, published a letter from me asking for reports of cases in which the injection of diphtheria antitoxin had been followed by alarming symptoms or death, especially noting whether there was any history of asthma in the case.

Out of about 40 reports received the information was definite and positive concerning 23 cases.

Sixteen of the 23 histories gave a history of some form of respiratory distress. Six of the 16 cases resulted in death and 10 of the 16 went into a state of collapse, with final recovery.

Seven of the 23 cases gave no history of respiratory distress, and that fact was definitely determined. Four of the 7 patients died, and 3 patients went into a collapse, with final recovery.

CONCLUSIONS BASED ON THE REPORTS.

1. There is a certain element of danger if any form of horse serum is used in subjects who suffer from any form of respiratory embarrassment, such as asthma, the so-called cardiac or renal asthma; hay fever, with resulting asthma, and in subjects liable to irritation of the mucous membranes when about a horse or a stable, whether asthma has resulted or not.

2. Collapse or death is accompanied by a respiratory crisis, and when death occurs it takes place usually in less than ten minutes from the time of the injection.

3. The administration of any variety of horse serum is liable to cause collapse, or death, if the subject suffers from respiratory distress, and it is not due to any toxin or antitoxin or to any errors on the part of the maker of the serum, or to the age of the serum, but is due to some highly organized proteid which is present in the serum, and it is the reaction of the proteid which causes the crisis. This reaction takes place only under certain conditions.

4. The heart continues to act long after respiration has ceased.

This is but a preliminary report, and at some future time I hope that a more complete one may be given.

Therapeutics

INSOMNIA.

Before discussing the treatment of this troublesome condition, it may not be amiss to consider what is believed to be the normal physiology of sleep. Dr. Alexander Morison, in the *Lancet*, Feb. 8, 1908, discusses at some length the subject of sleep and sleeplessness. There seems to be no doubt that cerebral activity is coincident with an increased circulation in the brain, the same as is true in any other part of the body that is actively functioning. When sleep occurs the circulation in the brain diminishes, the heart becomes slower, blood pressure diminishes, the surface circulation is increased, and the temperature falls, probably both by diminished muscle and cellular activity and by the increase of heat radiation. In normal sleep the pupils are contracted, perhaps Nature's method of inducing sleep by first shutting out all light. In death, coma, or profound unconsciousness the pupil is found dilated. It has been suggested that the far-reaching tendril from the cerebral cell may retract its processes during sleep and therefore be a cause of sleep. Morison thinks that this theory is not tenable, as it takes but slight peripheral stimuli to awaken a sleeping person. Also, a man may go to sleep even in the midst of noise which he has interpreted and has willed to shut out from causing any irritation of his cerebral cells. On the other hand, this same man may be quickly aroused by a new and even less intense sound. There must, then, be some changes in the cerebral cells themselves or some higher control must temporarily stupefy or perhaps anesthetize them.

Morison thinks that the cause of sleep is a chemical one. During the normal activity of the cerebral cell the chromophile substance is utilized by the cell and slowly diminishes in quantity. Also, during this cellular activity granules that stain with fuchsin increase in numbers and "the nucleus of the cell increases in volume, and the particles of chromatin adherent to it tend to become elongated. During rest or sleep the chromophile substance again gradually accumulates, and the above granules diminish in numbers and the nucleus assumes a smaller volume." These findings are the results of careful study of the activity of the cerebral cells by Ford Robertson (*Pathology of Mental Diseases*, p. 226, Edinburgh, 1900). In other words, the cause of sleep seems to be a chemical one, a fatigue caused by the products of active metabolism the same as a muscle becomes fatigued by the products of its excessive activity.

Individuals vary greatly in regard to the length of time they may work mentally without fatigue or with-

out the necessity of sleep. They also vary greatly in the rapidity with which such fatigue is abolished and the brain again alert and ready for activity. Consequently there is considerable variation in the amount of sleep that is needed by different individuals.

Morison divides sleeplessness into three groups: the cellular, the neural and the hemic. The most frequent cause of insomnia comes under the cellular group, i. e., sleeplessness due to worry and neurasthenia, and "worry keeps awake and kills more than work."

Under the heading of neural insomnia Morison classes insomnia due to bodily discomfort and pain. Such slight discomforts as the sensation of being overheated or the sensation of being too cold, or even the sensation of hunger, and certainly of thirst, may cause wakefulness. Many an infant is wakeful because it is too hot or too cold, sometimes because it is hungry, and often because it is thirsty.

Perhaps "the least frequent cause of insomnia is the hemic cause." This may be due to either actual circulatory disturbances or to a condition of the blood that is either irritating to the cerebral cells or is not sufficient for their repair.

ANOTHER CLASSIFICATION.

While this classification of the causes of insomnia by Morison is a good one, it would seem as though one that could be better used for deciding the treatment of the condition would be as follows:

First: Insomnia Due to Pain.—It requires no discussion to assert that until pain is stopped sleep can not take place. The best method to stop the pain must be decided by its location, its intensity, and the frequency of its recurrence. If the pain is real, it is as absurd as it is useless to use any hypnotic other than the easier of all pain, opium or some of its alkaloids. The amount of any other hypnotic or nerve sedative that is required to stop acute pain is dangerous and toxic. On the other hand, if the pain is so severe as to require doses of morphin that are dangerous or the frequency of which is dangerous, an anesthetic, as chloroform, must be considered.

Second: Insomnia Due to Mental Excitement.—This excitement has, of course, synchronously with it an increased circulation through the brain; thoughts come rapidly, the day's scenes are lived over and over again, and decisions for the future are made. Such cerebral excitement may be caused by pure mental stimulation, as some very exciting affair in life's career, or may be due to actual stimulation, as by caffeine (coffee and tea), alcohol, strychnin, quinin, salicylic acid, belladonna, or other stimulating drug. If the cause of such mental stimulation is rare, the condition could hardly be called insomnia, but if such mental stimulation is repeated insomnia occurs, and it is absurd to give hypnotics to such a patient while evening stimulation by some one of the above-named drugs is allowed. Many a patient is given a hypnotic for sleep while he is taking quinin and strychnin as a tonic after supper, and with the allowance of a liberal dose of tea or coffee. If this cerebral stimulation goes farther it becomes cerebral irritation, and if such irritation is continued, meningitis with delirium is the outcome. In prolonged cerebral excitement it is absolutely necessary to give the mental rest that is needed for recuperation, else meningitis may occur on the one hand, or insanity on the other. Peaceful surroundings, a dimly lighted room or an absolutely dark one, and the withdrawal of all