to the peritoneum, just as alum crystallizes around a thread suspended in a hot saturated solution.

This case of recurrent gall-stones was published in the *Annals of Surgery*, with a colored plate showing the stones and ligatures, and was subsequently distributed as a reprint.

Mrs. M., forty-two years old, was brought to me in May, 1897, by Dr. Dibble, of St. Stephen, N. B. She had a lobulated abdominal tumor which was a sacculated right kidney filled with pus and calculi. This was removed by abdominal section and after its removal I inserted my hand and felt of the gall-bladder; it was full of stones. Without enlarging the incision the gall-bladder was opened and nine stones, varying in size from a No. 6 shot to a robin's egg, were removed. Another stone was impacted in the common duct but, after much manipulation, was finally worked up into the bladder. The remaining kidney worked beautifully, the wound healed by first intention except when the gall-bladder was draining, and the patient left the hospital perfectly well on the twenty-first day after the combined nephrectomy and cholecystotomy. Had I not made this manual exploration the patient would have gone home but half cured.

Mrs. D. was sent to me in March, 1899, by Dr. Witherlee of Castine, Maine. I found a fibroid tumor the size of a large orange, and to the irritation of this tumor was ascribed her digestive symptoms, which were quite severe. For three years she has been good for nothing and could hardly eat anything. Formerly she weighed 180 pounds and now weighs 124. On March 20, 1899, I removed the fibroid tumor, and then inserted my hand, passed it up to the hepatic region and found that the gall-bladder contained one large stone. The abdominal incision was lengthened upwards to a point two inches above the umbilicus, and the fundus of the gall-bladder was drawn through the wound and a stone one inch square was removed. The bladder was immediately sewn up and the wound closed without drainage. Her dyspeptic symptoms were much relieved by suggestions from Dr. E. G. Cutler, and she is now well and strong and can do and eat what she likes, and has nearly regained her former weight. Other cases could be cited, but it seems to me that those above narrated justify and, indeed, should compel exploration whenever feasible.

Clinical Department.

A CLINICAL STUDY OF HEROIN.

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A NEW agent in the treatment of cough, at present in wide use and attracting considerable attention in the medical world, is heroin. It is a derivative of morphine—the diacetic acid ester—and is a white crystalline powder, almost insoluble in water, but readily soluble in water to which a few drops of acetic or hydrochloric acid have been added. It possesses many advantages over morphine as a respiratory sedative, among which the following may be mentioned: (1) It prolongs respiration, and at the same time increases the volume of each inspiration, making it a remedy much to be desired in the treatment of cough; (2) it is not a hypnotic; (3) absence of dan-

ger of acquiring the habit; (4) it does not weaken the respiratory apparatus; (5) it does not cause unpleasant disturbance of the stomach or intestines; (6) it can be prescribed in cases in which heart complications occur without risk of any deleterious effect upon that organ; (7) the ratio of the therapeutic dose to the toxic dose is considerably smaller than that of morphine.

The following cases, taken at random from a clinical field of over 100 cases of pulmonary tuberculosis in all stages of the disease in this hospital, will best serve to illustrate the efficacy of the drug:

CASE I. A. B., male, age thirty-two, clerk, entered hospital with history of pain in left side, which began about four months before admission; night sweats; hacking cough, most troublesome at night, with markedly diminished secretion, and slight dyspnea at varying intervals during day and night. Physical examination revealed consolidation of upper lobe on left side, and of apex on right side. Mist. codeia, one drachm, three times daily and at midnight was administered, and continued for two weeks, but with little result. At the end of this period the codeine was stopped and heroin substituted in doses of one-twelfth grain three times daily and at midnight. In four days the cough began to lose its hacking character, and the secretion became more abundant; in about one week the cough could only be observed in the morning and evening, and remained sufficiently loose to render the patient very comfortable. No dyspnea was observed a week after the heroin was begun and breathing still remained free. Mean respiration during first twenty days in hospital, A. M., 29; P. M., 29½. Mean respiration for twenty days following the first administration of heroin, A. M., 24½; P. M., 25½. For the night sweats the patient was given a pill of zinc oxide, two grains, with extract belladonna, threenths grain, for three nights without result. On the third night heroin was substituted for codeine, and on the second night following the sweats ceased.

CASE II. On admission the patient complained of severe and painful cough throughout the day and night; expectoration scanty, and obtained only after considerable effort. Physical examination showed both lungs involved with cavity in right middle lobe. The patient was given heroin, one-twelfth grain, three times daily at first, and shortly after the dose was increased to one-sixth grain. After one week of heroin the cough was diminished to a marked extent, and the pain heretofore associated with the cough had disappeared.

CASE III. Patient entered hospital complaining of "smothering sensation" in chest, with slight pain. Heroin, one-twelfth grain, three times daily and at midnight was administered, and in three days this "smothering" had disappeared, but not permanently, as the patient has since complained of it; but he says that it is not as severe or as lasting as before he was put on heroin. Of course, the cough which was present was greatly loosened, and this it was that gave the patient relief.

CASE IV. Patient entered hospital complaining of hard, dry and persistent cough, most troublesome towards evening. Expectoration scanty, and effort of coughing caused great pain in chest. The patient was given heroin, one-twelfth grain, and in three days the cough became soft, and expectoration became quite free. The pain in the chest had, of course, dis-

appeared with the hard cough. The patient remained very comfortable for a month, when heroin was discontinued, because I believed it to be the cause of a certain heavy feeling of which he complained. The cough, however, again became severe and hard, and heroin was repeated in the same dose as before. In three days the patient was freed from the distressing cough, and that "heaviness" has not returned. Mean respiration during period in which the patient was taking heroin, A. M., 24; P. M., 26. Respiration became more rapid while the patient was without the drug, averaging, A. M., 25 $\frac{1}{4}$; P. M., 27 $\frac{1}{4}$.

CASE V. Patient has been in hospital for some time. Complained of severe cough beginning about midnight and lasting until morning. Heroin, one-sixth grain, was administered every night at 10.30. The cough was absent on second night that heroin was administered, and has not since distressed the patient.

CASE VI. Patient complained of severe night sweats, and was given atropine, $\frac{1}{160}$ grain, for two nights without success; on the third night heroin, one-sixth grain, was given one-half hour after atropine, and sweats ceased.

CASE VII. J. F., male, age thirty-two, laborer. If any case can be said to be a striking example of the efficacy of a remedy this case is certainly that one. The patient entered the hospital with very slight but hard cough and a history of marked and constant night sweats. The latter had inconvenienced the patient for seven weeks previous to entrance, without an intermission of a single night. Mist. codeia, one drachm, three times daily, was administered for the cough, and an attempt was at once made to check the night sweats. Camphoric acid had been a favorite with me in the treatment of this symptom, and I accordingly gave 20 grains at bedtime, and repeated the same dose for four succeeding nights, but without result. Then atropine sulph. and ac. sulphuric aromat. were tried in the proportion of one-fiftieth of the former and 10 minims of the latter, but again without a favorable result. This was given for five nights. Atropine sulph. alone was tried in dose of one-fiftieth grain for a week; still no response. Next was tried a pill of zinc oxide, two grains, and extract belladonna, three-tenths grain, for five nights, and this, like the rest, failed. Pilocarpine was next tried in dose of $\frac{1}{160}$ grain, but it only increased the sweating. Next in order came warm baths, and then bathing with ac. sulphuric dilute, but these met the same fate as all the preceding. Then I decided to give the sweat glands a rest, and for a week nothing was administered for the sweating, and at the end of this time atropine sulph. was repeated in dose of one-fiftieth grain, but without result, until about the fifth night of the administration of the latter the codeia mixture was discontinued and heroin substituted in dose of one-twelfth grain three times daily. On the third night of the administration of the latter the sweats decreased to a great extent, and on the fourth night ceased altogether. The heroin had replaced the codeia mist., not because of the sweating but because of the hard cough, which did not improve; and since the patient had been taking the former the cough has loosened considerably, and he now experiences marked relief. I regard this case as typical, not of the curative effect of heroin on the night sweats, but rather of the quality of the drug to assist the ordinary anhydrotics when, given alone, they fail.

CASE VIII. Case of tubercular laryngitis. Patient complained of severe sore throat, which prevented deglutition. Pills of heroin, one-twelfth grain, were administered every three hours, and kept the throat in a condition of anesthesia for about one to two hours, rendering the patient fairly comfortable, and most of the time free from pain. It is unnecessary for me to mention that the patient was instructed to dissolve the pill slowly on his tongue. Two other marked cases of tubercular laryngitis were temporarily relieved by the administration of heroin in this manner.

These cases are fair samples of the results obtained by the administration of heroin. In almost every case in which it has been tried it has been of some service in the alleviation of cough, be that service ever so slight. Even the advanced cases have been to a certain extent relieved. I found, however, that the more favorable results were obtained in those cases in which the disease process had not advanced to too great an extent. In this class of cases the drug never failed to loosen a hard cough and produce free expectoration, giving marked relief from pain when present. I regard it as unequalled as a sedative in the treatment of cough of pulmonary tuberculosis, and venture to say, although I have not tested it in cases of cough in other pulmonary affections, that it will act equally well in such cases.

The smaller dose of one-twelfth grain is sufficient to afford relief in most cases, certainly in the milder or earlier ones, but in some instances it was found necessary to increase the dose to one-sixth grain, as after a time the smaller dose seemed to lose its effect upon the patient. Sometimes when heroin had been taken for a long time, it was found to be a good practice to stop it and give codeine, or some other sedative, for one week, and then renew the heroin at the end of this time. In this way the drug acted as well when renewed as in the beginning of the treatment. It is true, however, that heroin produces its effect for a much longer period than does any of the other sedatives used in this affection.

I said it was not a hypnotic, but the fact that it relieves the distressing cough which is often the cause of many sleepless nights, and thus ensures a natural sleep, obviating the necessity of using hypnotics, should not be overlooked.

I have very carefully watched the temperature charts for any evidence of its action as an antipyretic, but have been unable to find that it produces any effect whatever on the temperature. It certainly possesses no quality as a preventive or cure of the chills so persistently present in the later stages of tuberculosis. Like the respiration, the pulse is rendered fuller and slower. In 10 cases observed the mean pulse rate was reduced about four beats per minute; in one case the rate was reduced eight beats per minute. By its action upon respiration and its ability to relieve cough and promote excretion of secretory products, it manifests a decided effect upon the dyspnea.

I regard the influence of heroin on the night sweats as second only in importance to its influence as a sedative for the cough. In the cases cited its quality as an adjuvant to the ordinary remedies in checking the sweats is well marked. In six other cases favorable results were obtained in either checking or markedly decreasing the sweat by the administration of heroin in conjunction with one or another of the ordinary

anhydrotics. Its action in this particular is best appreciated after meeting failure in using the ordinary agent alone.

The cases of tubercular laryngitis mentioned are typical of its action as an analgesic in the treatment of the painful throats of this affection. In these cases it afforded considerable relief from pain for periods of about one to two hours following the administration of the pill.

In regard to its influence on respiration, I have carefully noted 19 cases, and have found that in each case the mean respiration A. M. and P. M. has been reduced from two to five, and in some cases as high as seven per minute.

No action on the intestines was observed, except, perhaps, a slight tendency to constipate if given in larger doses than one-twelfth grain. Of this, however, I will not be certain, as in the great majority of cases this action was not apparent. In some cases it has been noticed to cause a disturbance of the stomach. One patient complained that the drug caused considerable nausea shortly after taking, while with others the disturbance can best be described by using a term applied by a patient to the condition of his stomach after taking heroin — "squeamish." One complained of complete loss of appetite whenever he took the drug. In all, some disturbance was noted in five cases out of upwards of 70 patients taking the drug. I should add, however, that two of those who complained of disturbance of the stomach while taking heroin were later able to use it without noticing any ill effects. Another, and, in my opinion, the only real objection to heroin, is that in certain cases the larger dose of one-sixth grain was found to cause a feeling of heaviness during the day. To quote a patient, "I feel heavy and as though I want to sleep, but if I try to do so I find that I cannot." This was observed in four cases. The drug did not in any instance produce this effect when given in the smaller dose. But the chief use to which heroin can be put is as a sedative for the cough and to prevent the distressing and disagreeable stagnation of secretory products in the lungs, particularly in cases of pulmonary tuberculosis. No drug can compare with heroin in this particular. Cases that have come into the hospital with painful and almost constant cough, with inability to raise the sputum, resulting in fetid breath and more or less dyspnea, have been almost immediately relieved of pain, and the expectoration rendered freer, with decrease in the dyspnea, by the administration of heroin in doses of one-twelfth grain three times daily.

A CASE OF OLD SHOULDER DISLOCATION.

BY FRANK E. PECKHAM, M.D., PROVIDENCE, R. I.

THE subject of old dislocations of the shoulder joint has been thoroughly worked up by Dr. F. B. Lund, who found 24 cases up to 1897, treated at the Boston City Hospital. The oldest case was one of one and one-half years' duration, treated by open incision and resection of capsule. The following case was so interesting to me that I venture to report it quite fully.

The patient, a girl of sixteen years, fell down stairs July 10, 1897, striking on the right shoulder. At that time there was pain and disability, but the dis-

location was not recognized and the treatment consisted of application of liniments, etc. Early in the year 1899 she was examined by a number of surgeons, all of whom advised against operation. In May, 1899, the patient came under my observation and care. At this time there was no motion in the joint, and the patient was able to do but very little work of any kind with her right arm, any attempt at using it causing considerable pain. I probably should not have operated, but the girl was extremely anxious to have something done, and her uncle and aunt, with whom she lived, also urgently solicited surgical interference; consequently, after having it distinctly understood that all that was promised was an "attempt" to do something, operation was undertaken. The reasons, therefore, for this operation were disability, pain when the arm was used very much and the demands of the patient and family that something be done. The disability was very marked; about all the girl could do was to wash dishes and this not very well, the motion being entirely scapular. A radiograph was obtained which showed a large gap below the acromion process, but whether a fracture existed could not be made out.

May 10, 1899, one year and ten months after the accident, operation was undertaken. Ether was the anesthetic, and the usual aseptic precautions were taken. The posterior surface of the shoulder was selected for the incision in order to avoid all difficulty with the large vessels and nerves. A circular flap was turned up, with its convexity downward exposing the muscles beneath. The deltoid, supraspinatus and teres minor muscles being divided, the capsule of the joint came immediately into view. This was stretched tightly downward, and on being divided the humeral head came into view just below the glenoid fossa, with the neck projecting diagonally forward, in a line perpendicularly downward from the coracoid process. The head of the humerus was attached to the neck of the scapula below the glenoid fossa, by what seemed to be bony tissue. This union was destroyed by chisel and mallet, and then the difficulty began. Finally, by a very broad and blunt periosteotome used as a lever under the anatomical neck and the assistant pushing up on the arm with all the force possible, it went into place. The shoulder was held in this position while capsule, divided muscles and the incision were sutured, dressing applied and shoulder bandaged with firm support under elbow.

After a few days, the shoulder was manipulated daily in order to preserve mobility if possible. This was done under chloroform two or three times, but motion gradually disappeared and all treatment ceased a little less than one month after operation, the head of the bone remaining firmly in its socket.

The three reasons for operation as stated above were disability, pain and the family demand. Treating these reasons in the reverse order, the family demands were satisfied. The pain has disappeared. The disability is much less with only scapular motion when the head of the bone is in its socket, than scapular motion with the humerus in the awkward position as described above. The patient can now not only wash dishes, but sweep, scrub floors, and, in fact, do about all the housework. Lastly, the patient and her family all feel that a great improvement has been obtained and are grateful for the relief.