cept slight signs of a localized bronchitis at the right base behind.

He was given ten drops of terebene for cough p. r. n., also told to take the white of a raw egg when he felt the burning pain coming on, and about ten minutes later to take ten grains of bicarbonate of soda. Maltine given as a tonic.

On his return about a week later, he reported (considerably to my surprise) that the "stomach trouble" had entirely stopped, and for two days he had not been obliged to take the medicine. The day previous he had worked with the dyed hair, but without the usual discomfort. The sputum, which he brought me, was: (1) Specimen raised in the morning before going to work, and after having been in the *dyed dust* the day before: it contained a few small fragments of dyed hair and unidentified foreign matter. No logwood fibres. There was a very slight reaction for copper, and a well-marked test for iron. (2) Specimen raised at noon after a half-day's exposure to the *dyed dust*: The sputum was frothy, mucous and strongly tinted with blue, while in it were many dark-blue specks. Microscopically, these blue fragments were evidently plant-fibres of some kind, and around each was a kind of halo of lighter blue; they were undoubtedly bits of logwood. The broken fragments of hair were surprisingly few; almost all were dyed, but the undyed hairs were most of them quite different in form from the stained specimens, and must have been horse-hair. Chemically, the copper and iron tests were much stronger than in the first specimen. (3) Specimen after a morning's work with undyed horse-hair: The sputum was very small in amount, frothy, thin and unstained. Microscopically, it showed a few unstained fragments of hair, similar to the unstained fragments of the second specimen, but no logwood fibres. The chemical tests for iron and copper were negative. No bacilli of tuberculosis could be found in any of the specimens. The examination of the dust from under the "separator" corresponded with that of the sputum; iron and copper, dyed bits of hair and unstained fragments, evidently from a different animal, bits of logwood and foreign matter being found. As already stated, zinc, arsenic and lead were absent in the dust.

Since he first came to the hospital I have seen the patient several times, and the gastric symptoms always return soon after exposure to the dyed-hair dust; but they have thus far always yielded to the treatment first prescribed. The signs in the lung finally disappeared, and when he was seen by Dr. F. C. Shattuck, who most kindly examined him for me a few weeks ago, nothing abnormal was detected in the chest.

Two points seem to me of special interest in this case: first, the absence of any signs of an abnormal condition either in the larynx or lungs after twenty years of almost daily exposure to this dense dust; second, the evident symptoms of marked irritation of the digestive mucous membrane, without a similar condition in that of the respiratory tract, though the latter would seem likely to be the most easily reached by the irritating particles. To what extent absorption has taken place in the present instance — if such has occurred at all — it is, I think, impossible to say.

To try to determine this question, and also to, if possible, show the probable condition of the lungs from exposure to this dust, I have kept some animals for several hours each day in a close cage, into which this dust is blown continuously. Judging from similar

experiments with coal-dust, it will be from sixty to ninety days before any pathological change is likely to occur.⁴

Clinical Department.

THE OPEN INCISION IN UNCOMPLICATED CASES OF HYDROCELE.

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I READ with a great deal of interest the paper by Dr. M. F. Gavin, and the discussion thereon, in your issue of March 1st. I cannot accept the doctor's *dictum*, "No simple, uncomplicated case of hydrocele ought to be treated other than by injection." And I must take exception to his statement, "The open incision, with or without excision of the sac, means the administration of an anæsthetic [general, I suppose he means], detention in bed for a varying period from one week to four, while to undergo an operation has considerable effect on the minds of most of our patients."

Permit me to refer to my own experience, limited though it be, to show the simplicity of the open incision in uncomplicated cases.

CASE I. H. K., soldier, German, thirty-two years old, of fine physique and in vigorous health. This man presented himself at the hospital November 8, 1891, expressing the desire that I should look at his scrotum, and, if possible, relieve his discomfort. Inspection showed a swelling of five and a half inches in length by about three and a half inches in greatest width, situated in the right compartment of the scrotum. It was easily determined to be a simple hydrocele. The man stated that he had first noticed the swelling six or eight months previously, but had paid no attention to it until the tumor became an annoyance on account of its size. It was at no time painful. I had examined this man as a recruit in November, 1890, and I know the tumor did not then exist. Despite the fact that the hydrocele was of comparatively recent origin, and that the wall of the sac presumably was not thickened to any extent — I say *presumably* on account of its recent growth, for the tumor was so tense that it was impossible to determine positively the amount of thickening — and notwithstanding it barely exceeded the limit in size usually laid down for cases suitable for operation, I decided to perform Volkman's operation rather than trust to paracentesis and injection of some irritating fluid, which, to me, is a most unsurgical procedure.

Having done a Volkman's operation three years before, and been rewarded by seeing recovery without the appearance of a single drop of pus, I made every effort to obtain the repetition of so desirable a result.

⁴ On March 16th one of the rabbits referred to above was found dead in its cage. During about five hours (average) each day it had been in a closed cage, to which a steady current of air filled with dust from under the separator was supplied and kept in motion by a forced blast. For two days before death the animal had not seemed well, and had, therefore, not been placed in the dust cages. There had been no cough and no sneezing, except during the first week; and until March 15th the appetite was good. Up to March 12th (the twenty-sixth day) there had been a loss of one-quarter of the original body-weight. Death occurred on the thirtieth day. On post-mortem examination, twenty-four hours later, nothing abnormal was found, except that the mucous lining of the stomach was throughout thickly studded with small spots and larger patches of dark brown or black, which, microscopically, proved to be *not a post-mortem change*, but a *hæmorrhagic gastritis*. A pathological change in the lungs was not to be expected after so short a time of exposure to the dust; and it is as yet too soon to determine the results of a sufficiently long exposure under the same conditions.

After a bath, the man's abdomen, pubes, scrotum, perineum and thighs were shaved from the umbilicus to mid-thigh, the parts then scrubbed with soap and water, and afterwards with ether, and finally laved with a solution of bichloride of mercury (1-1000). Equal care was bestowed on the toilet of my hands. The instruments were boiled, and afterwards immersed in a solution of carbolic acid (1-20). A length of rubber tubing (also treated to a bath in the carbolic solution) was wound tightly around the base of the penis and scrotum and secured. Sixty minims of a four-per-cent. solution of cocaine hydrochlorate were injected along the line of the intended incision, resulting in complete abolition of painful sensation in about eight minutes. An incision of about two and a half inches was then made through the integument and down to the sac. Loops of silk were passed through the sac wall at the end of the incision and tied, as my former experience had taught me that the retraction of the tissues due to the subsequent irritation of the

carried to the lowest part of the cavity and secured by a safety-pin after slipping it through a hole in a piece of rubber protective-tissue long enough to cover the wound with a small margin. This was covered with a layer of hygroscopic gauze moistened with bichloride solution (1-3000), which in turn was covered with dry gauze, and over all a double layer of protective extending (with a wide margin) over the entire dressing. The dressing was secured by a firm bandage, so arranged as to apply considerable pressure and support the parts. As each layer of the dressing was applied, a hole was cut in it and the penis drawn through. The man was directed to turn on his side in urinating, and cautioned by no means to allow any urine to soil the dressings. The bandage was arranged to avoid as much as possible any soiling of the dressing by the fecal discharges, and an inspection of the dressing after each evacuation ordered made by the nurse.

The man was permitted to sit up as soon as he felt so inclined, which was on the third day, the only re-

CASE I. Cremaster contracted.

CASE I. Cremaster relaxed.

interior of the sac caused it to be difficult to secure nice coaptation of integument and serous membrane in the subsequent suturing. The sac was then incised to a trifle less extent than was the integument; the hydrocele fluid was evacuated; and the cavity of the sac swabbed with a five-per-cent. solution of carbolic acid in glycerine, as recommended by Gerster. The edges of the parietal layer of the *tunica vaginalis testis* were then united to the edges of the integument by a continuous suture of catgut, very much as a tailor makes a button-hole. In making this suture, it was found that the skin and the sac wall had both retracted more than the cellular tissue lying between them. This was so because of the cocaine injected—such, at least, is my opinion, for it was gelatinous and clear, and had the appearance of infiltration of fluid; furthermore, there was no such appearance in my former case, in which general anæsthesia was obtained by ether. This redundant tissue was removed by the scissors before suturing. The sac was washed out with a bichloride solution (1-3000), and the surrounding parts bathed in the same. A second swabbing of the interior of the sac with the carbolic solution was done, and the wound was dressed. A drainage-tube was

striction being to refrain from walking around. The dressing was not disturbed until the bandage became loose, which occurred on the ninth day, when we were rewarded by the sight of a clean, dry wound, perfectly odorless except for the odor of the rubber protective. The scrotum was considerably swollen, and had a doughy feel. The sutures had disappeared, and the drainage-tube had been pushed out and was in the dressings. The incision was a deep sulcus in the side of the scrotum, by parting the lips of which a pink line could be seen apparently perfectly healed. The dressing had been stained by the serum, and had a brownish color, but there was no evidence of pus. There had been no pain, no rise of temperature. Mindful of the caution of Knester, as quoted by Senn in his article on "Hydrocele" in Buck's Hand-book, that failure attends this operation at times because of the too early suspension of antiseptic precautions, a dressing similar to the first one was applied after a thorough washing of the part with the 1-3000 bichloride solution, discarding the first layer of protective.

On the fourteenth day the dressings became disarranged on account of the active movements of the

man, and the wound was again inspected. The gauze was slightly stained, and at the lower part of the cut corresponding to the site of the drainage-tube were a few granulations. These were touched lightly with nitrate of silver, a little calomel dusted in the sulcus, and a dry dressing applied and held in place by a suspensory bandage. The man was fit for duty at this time, but was kept under observation until the twentieth day, and engaged in such occupations as are suitable for a convalescent. When the man returned to duty the scrotum and contents seemed normal in size. No cicatrix was visible, nothing but a deep sulcus (see photograph). The scrotal wall was adherent at one point; apparently the sac was obliterated.

CASE II. The case referred to as operated on three years previous is that of a young man of twenty, a railroad brakeman, on whom I operated at Laredo, Tex. In this case the tumor was five inches in length and of about a year's growth, situated also on the right side. I operated precisely as in the case just reported, except that ether was used for anæsthesia, and the dressing was the same, except that iodoform was used. The dressings were removed the eighth day, disclosing a dry, clean cicatrix. The young man insisted on going to his home in Corpus Christi, Tex., as soon as the second dressing was applied, and went back to work on the road the next week. Either of these men would have been at work a week after the operation had they been professional or business men.

It seems to me that open incision is the only operation for simple hydrocele of any size. The operation is not formidable with cocaine anæsthesia. My soldier watched the operation with interest, commenting on the various steps in "asides" to the nurse, and seemed quite cheerful.

I have characterized the practice of paracentesis and injection with an irritating fluid as unsurgical. I do not draw on any extended experience for this opinion, for I have treated but one case by this means. A comrade of my brakeman came to me a short time after the operation with the request that I operate in like manner on him. He exhibited a hydrocele about the size of a large hen's egg, from which I removed the fluid, having thrown a few drops of cocaine solution into the site of my puncture, and then injected the sac with twenty minims of pure carbolic acid, as recommended by Levis, at the same time promising to operate as he desired in the event of a recurrence. I have never seen the man since. I heard indirectly that he was "all right," by which I felt assured that none of the accidents which sometimes follow injection — as suppuration of the sac, gangrene of the scrotum, or even of the testicle — had occurred, but was left in ignorance of the success or failure of the purpose of the operation.

It is on general principles that I object to the injection of an irritating fluid into the hydrocele sac. It seems to me unsurgical and unscientific to set up an inflammation in a closed sac, which at once proceeds beyond your control, has no drainage, and may do serious damage to important structures. Agnew states that he has had but one failure in a number of years with the injection of tincture of iodine. Other surgeons have not had such brilliant success. According to Senn, in the article above referred to, nearly as high as fifty per cent. of failures have been reported as the result of this operation. Nineteen cases were reported by Bardeleben showing sixty-five per cent.

successful; and there are cases on record of serious results, involving even loss of life, following the injection of the tincture of iodine. The use of carbolic acid seems to promise better results, but I am not able to find any statistics concerning them.

Injection, then, does not appear to be either safe or sure; still it is spoken of by Agnew, Wyeth and others as the conservative method, to be tried in the majority of cases before attempting the more formidable procedure of Volkmann. If we had the power to set up just a sufficiency of inflammation to obliterate the sac, and not enough to do any damage to the structures involved, injection would be the ideal operation; but, unfortunately, the most of us have no such power. To be sure, the interior of the sac is irritated by swabbing with the carbolic-acid solution in the open treatment; but it is quite another matter to irritate a tissue after drainage is established.

The operation of Volkmann appears to me to be the safest and surest. With cocaine anæsthesia it is not formidable, and with attention to antiseptic precautions it ought not to be serious. The man is incapacitated for duty but a few days, not much longer than the rest recommended after injection. And with attention to the irritation of the interior of the sac by the carbolic acid, the result should be fairly sure, the failure being frequently, if not usually, due to the non-obliteration of the sac on account of the "too antiseptic" healing of the wound.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

J. T. BOWEN, M.D., SECRETARY.

REGULAR meeting, Monday, February 12, 1894, the President, Dr. C. F. FOLSOM, in the chair.

DR. A. T. CABOT reported a case, illustrative of THE CHANGE OF A BENIGNANT TUMOR INTO A SCIRRHUS CANCER IN THE BREAST.

The patient was a lady fifty-four years of age, who had had more or less trouble in her breast for over twenty years, this having first appeared at the time that she was nursing her first child, now twenty-six years of age. For ten years she had noticed a lump in the outer segment of the right breast which during that time had not materially altered in size.

She was seen by Dr. Cabot in February, 1893. This little mass then was about the size of a large English walnut. It was movable, and seemingly not attached, either below or to the skin. She had noticed that this lump sometimes increased and became painful at the times of her monthly sickness, but then resumed its usual condition.

Dr. Cabot saw it again in July, when it seemed possibly a little larger than at the previous examination. The skin over it showed a little irregularity of surface, the irregularity seeming to be caused by a network of fluid spaces close under the outer layer of the skin. At no time could anything be felt in the axilla.

The patient was seen again in December, she having in the meantime had some electrical treatment, in the hopes of dissipating the lump. The condition of the skin was unchanged, and it was deemed wise to