contains few or none. Microscopic examination shows what appears to be a coagulation necrosis of the involved fibers. The distribution of the lesions in the muscles of the animals recalls the clinical phenomena of muscular rheumatism in man. They are most numerous in the more tendinous portions of the muscles of the extremities, the flat muscles about the neck and shoulder, the intercostal muscles and the muscles of the spine.

In all the animals mild arthritis and endocarditis and in most of them pericarditis were present, but not in marked form. Iritis and conjunctivitis, hemorrhages in the sclera, retina and iris have been observed repeatedly. Occasionally lesions in the cortex of the brain, frequently punctate hemorrhages in the stomach, followed by ulcer, and hemorrhages in the appendix have been found.

It is well known that cold plays an important rôle in rheumatism. Exposure to cold after injections of rabbits increased the percentage and degree of joint involvement. Injection of frogs, kept at a temperature of from 22 to 25 C., with pneumococci, ordinary streptococci, and the cocci from rheumatism, show that frogs are quite insusceptible to the former but succumb to the latter, the blood containing a large number of cocci. This result suggested that the rheumatism cocci may grow better than pneumococci and streptococci at a low temperature, and this was actually found to be the case, and this then may be one of the reasons why chilling aggravates so markedly the symptoms of rheumatism.

The more virulent strains from rheumatism and certain other strains of streptococci which have attained the proper grade of virulence frequently produce hemorrhages of stomach and duodenum followed by ulcer. This has been observed in rabbits, guinea-pigs, dogs and in a monkey. To meet the objection which might be raised that although these lesions follow the injection of the organisms grown *in vitro* this is no proof that similar lesions may be caused by those grown *in vivo*, emulsions of tonsils were injected intravenously in rabbits, guinea-pigs and dogs. Arthritis (streptococcal), hemorrhages of stomach and ulcer of stomach and duodenum have thus been produced repeatedly. The emulsions from freshly removed tonsils were found to be very toxic for rabbits, guinea-pigs and dogs. The symptoms following injections of relatively large doses in guinea-pigs and dogs are those characteristic of anaphylaxis in each. The degree of toxicity was greatest in the emulsions from tonsils which were visibly infected and which showed the greatest numbers of bacteria in plate cultures.

ACUTE TRAUMATIC SUBDELTOID BURSITIS

A NEW AND SIMPLE TREATMENT*

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Subdeltoid bursitis in its acute stages has hitherto been treated by rest to prevent primarily further traumatism to the bursa from motions which cause it to impinge on the coraco-acromial ligament. Counter-irritation, especially with the Paquelin cautery or hot air, has been employed together with the use of ice-bags for the pain. In most instances even with this treatment progress is not particularly rapid, a fact which can be readily appreciated from the sheltered position of the bursa beneath the deltoid muscle. Any treatment in which motion is permitted is sure to be slow owing to

the renewed traumatisms to the already distended bursa. One of the most distressing difficulties is the loss of sleep due to the inability of the patients to find a comfortable position or to their being awakened by pain from any unconscious motion that brings the bursa between the ligament and the head of the humerus.

The method of treatment suggested in this paper resulted from an effort to make the diagnosis of such cases more definite for students by showing through aspiration that the bursa contained fluid. The first instance in which this was attempted was a case of pyemia following acute osteomyelitis of the femur in which the patient developed pain in the shoulder and symptoms of a metastatic purulent subdeltoid bursitis.

Aspiration of the bursa yielded pus, and the diagnosis was confirmed at operation when the distended bursa, filled with a purulent exudate, looked much like the wax injection of the bursa illustrating Baer's article.

CASE 1.—A little over a year ago, a working man, aged 40, applied for treatment at the dispensary complaining of an injury to his shoulder. While engaged in his work, the patient slipped and fell, striking his shoulder against the pavement. No immediate disability was noted, but the next day the shoulder began to hurt and the patient found that it could not be used without pain. This condition increased up to the time of his visit to the dispensary, a week after the injury.

Examination.—On inspection nothing abnormal could be found about the affected joint. Palpation revealed a painful point just in front of and below the tip of the acromion process. Palpation of the head of the humerus in the axilla revealed no tenderness about that portion of the joint. Adduction was possible, and there was almost complete internal and external rotation with the hand and arm at the side. Abduction was limited to 20 degrees, and the patient was unable to put his arm behind his back.

Treatment and Result.—With the idea of making the already obvious diagnosis more certain, the bursa was aspirated and about 3 c.c. of a straw-colored fluid removed. The effect of the aspiration was immediate, inasmuch as the patient could raise his arm at once in complete abduction. There was still slight discomfort on motion for a few days which disappeared completely in the course of a week without any further treatment than the aspiration.

CASE 2.—Another patient, aged 63, who worked in a sawmill, was admitted to the dispensary service recently. Two weeks previously, he had fallen and struck his right shoulder with his arm doubled under him. Two days later it began to pain him and gradually became worse. The pain was most acute in the shoulder, the patient indicating a point on the deltoid between the coracoid and the acromion processes. There was also some pain running down the biceps on motion. One of the most distressing features of this case was the loss of sleep. On two occasions, the patient sat up all night because he could get no rest from the pain in bed.

Examination.—Pressure over the subdeltoid bursa produced exquisite tenderness. Palpation of the head of the humerus in the axilla revealed that the joint was not tender in this region. There was no crepitation heard on auscultation over the long head of the biceps on flexion and extension of the forearm. Adduction was free; the hand was easily placed on the opposite shoulder. Internal and external rotation was practically complete with the arm at the side, but abduction was limited to 15 degrees, and the hand could not be placed behind the back.

Treatment and Result.—In this instance the bursa was aspirated both with the idea of confirming the diagnosis and as a therapeutic measure. About 4 c.c. of a straw-colored fluid were withdrawn which coagulated on standing and remained sterile after being incubated for forty-eight hours. As in the previous case, the effect of the aspiration was instantaneous in permitting the patient to abduct his arm completely and put his hand behind his back. In the promptness of its result the therapeutic effect of the aspiration can be compared only with

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the rupture of a ganglion. Two days later the motions were still free; the patient slept well, and there was only a slight tenderness over the bursa which disappeared completely in a week.

METHOD OF TREATMENT

The method commends itself as the simplest and most effective that has yet been suggested for the treatment of acute traumatic effusions into the subdeltoid bursa. From the therapeutic point of view, the results are almost instantaneous. Moreover, the confirmation of the diagnosis by obtaining fluid from the bursa is extremely satisfactory.

Our experience with the method has been confined to two acute cases, and it is quite possible that there may be instances in which a more serious injury to the bursa

Diagram showing method of aspiration.

may require repeated aspiration owing to a recurrence of the effusion. I am inclined to believe, however, that the chief factor in maintaining the condition to a chronic stage with the accompanying marked thickening in the wall of the bursa is due not so much to the severity of the primary injury as to the repeated traumatism brought about by movements of the shoulder-joint, which cause the already distended bursa to strike against the coraco-acromial ligament and thus maintain a sort of vicious circle.

After the aspiration, it might be well to fix the joint by a Velpeau bandage for a few days, although we have allowed and even encouraged these two patients to use their arms in order to determine just what effect the simple aspiration would have. It is particularly desirable to know whether or not the method is of any value in the treatment of the more chronic forms of subdeltoid bursitis. While this is purely a matter of speculation, it may prove that radical excision of the bursa according to the method of Baer or the treatment of Codman will be the most successful therapeutic procedure in these cases.

The method of aspiration which we employed is shown in the accompanying diagram. A Luer syringe is partly filled with about 1 c.c. of sterile cocain or novocain solution. The latter is injected into the skin and ahead of the needle as it passes through the deltoid. The needle is pointed roughly parallel to the clavicle and directed toward the bursa lying just over the bicipital groove. The point of entrance is about 2 cm. below the level of the acromion process. As the point of maximum tenderness lies directly over the bursa, this will prove perhaps the best guide for the needle, for it was at this point that fluid was obtained in my cases.

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THE RECENTLY DESCRIBED PARASITE OF SYPHILIS

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In a recent article E. H. Ross¹ describes his "jelly method" for the examination of blood, fluid expressed from the lymph-nodes and the scrapings from sores or chancres in cases of suspected syphilis. I have repeated the technic and examined scrapings from chancres, the peripheral blood, and fluid squeezed from punctured lymph-nodes of syphilitic patients. I have found the parasites and followed most of the phases as described by him. "The jelly method" is so simple that I write this report with a view to its general adoption as a means of diagnosis of syphilis.

The bodies found by this method are regarded as protozoa with definite staining reactions; they undergo visible changes and certain stages of development within the protoplasm of the cells of chancres, lymph-nodes and mononuclear leukocytes. When lymph or scrapings from chancres cannot be obtained, an examination of the peripheral blood, prepared in the same way, is as satisfactory, but requires more time, as the organisms are scarce and difficult to find. They are not more difficult to find, however, than the *Plasmodium malariae*.

One has only to compare the ordinary familiar blood-picture with slides from syphilitics prepared in this way to be convinced of the striking differences. The parasites appear as small, round, oval or pear-shaped, copper-colored bodies containing five granules more or less deeply stained and having at times a so-called vacuole or nucleus (Figs. 1 and 2). Sim-

Fig 1

Fig 2

Fig 3

Fig 4

Fig 5

Recently described parasites of syphilis.

ilar granular bodies are found in the cytoplasm of the mononuclear cells and may be seen to move freely, to enlarge and apparently to become surrounded by a wall. At times they divide and may even be extruded from the cell and become motile bodies free in the surrounding fluid (Figs. 3 and 4). The "enclosed inclusion" within the cell (Fig. 5) may develop into a bunch of spirochetes which diverge from the central stained mass like the spokes of a wheel. The jelly is made as follows: agar 1 gm., sodium chlorid 0.5 gm., distilled water

1. Ross, E. A.: Brit. Med. Jour., Dec. 14, 1912, p. 1651.

2. For life cycle see McDonagh: Lancet, London, Oct. 12, 1912, p. 101A.