the liver, dyspeptic disorders, alcoholism or syphilis are prominent etiological factors; portal stasis is marked; nausea, vomiting, hematemesis, melena and the various signs of portal obstruction differentiate this form from the "icing-liver" type of Curschmann. The great omentum is never nodular, as in the form of chronic peritonitis. Jaundice occurs in 27 per cent. of cases; the liver may sometimes be felt to be warty. Cerebral manifestations are not uncommon. As Hale White[19] has pointed out, when tapping becomes necessary the patient rarely lives long. On the contrary, in simple hyaloserositis the abdomen may be tapped a great number of times and the patients may live for years in comparative comfort.

In carcinoma the patient is usually advanced in years and cachexia is marked. Careful examination of the stomach and, in the female, the ovaries should be made; a hemorrhagic or chylous or pseudo-chylous ascites is in favor of carcinoma. The hemorrhagic exudate is somewhat less frequent in the tubercular form. It is doubtful whether the presence of peritonitis, unless of the perforative variety, can be diagnosed with certainty when complicating peritoneal carcinoma. Abdominal pain and tenderness might in some cases suggest it or the presence of a friction rub. In carcinoma the disease is fairly rapid.

TREATMENT.

Complications or special symptoms may call for appropriate remedies, but the treatment is essentially surgical. It has long been known that tuberculosis of the peritoneum has been apt to disappear after abdominal section, and indeed without it, and a simple hyperplastic peritonitis has been occasionally benefited by this procedure. Especially in the form of hyperplastic tuberculosis localized to the cecal region resection of the affected part may result in complete cure. Operation in some cases may be called upon to relieve obstruction.

For the simple form, tapping is usually necessary at increasingly frequent intervals. With regard to medicinal measures, diuretics, especially caffein, have been recommended in the hope of diminishing the ascites. The patients should be kept in the best hygienic surroundings.

In the carcinomatous peritonitis the outlook is, of course, hopeless.

REFERENCES.

1. Philadelphia Med. Jour., Nov. 12, 1898.
2. Berliner klin. Woch., December, 1897.
3. Deutsche med. Woch., Jan. 7, 1892.
4. Prager med. Woch., 1893.
5. Path. Anat. 3, Aufl. iii, S. 138, 1861.
6. Path. Anat. 8, Aufl. ii, S. 654, 1895.
7. Zuckergussherz, Deutsche med. Woch., April 17, 1902.
8. Studies from the Royal Victoria Hospital, Montreal, vol. I, No. 3.
9. Deutsche med. Woch., 1884, p. 564.
10. Quoted by Bauer, Von Ziemssen's Cyclopedia, 1878; Eng. Trans., vol. viii, p. 292.
11. Allg. Wien. med. Zeit., iv, 1902.
12. Journ. of Experimental Med., vol. vi, No. 1.
13. Deutsche Zeit. f. Chir., 1894-5, lx, p. 562.
14. Cited by Coquet, Thèse de Paris, De la Variété Chirurgicale de Tumeurs Coecales Tuberculeuses, 1894, p. 28.
15. Cited by Itié, Thèse de Montpellier, De la Tuberculose Intestionale à forme Hypertrophique, 1898, p. 12.
16. Spec. Path. u. Therap., Intestines and Peritoneum, p. 742.
17. On Multiple Serositis. Trans. of Coll. of Phys., Phila., 1902.
18. Pericarditic Pseudocirrhosis of the Liver. Trans. Chicago Path. Soc., April, 1902.
19. Guy's Hosp. Rep., 1893, vol. xlix, p. 1.

DISCUSSION.

DR. W. M. WELCH, Baltimore—Dr. Nicholls' description and classification of these interesting forms of chronic peritonitis are most commendable. I have been interested in a number of the forms which he describes, especially in the diffuse chronic thickenings of the peritoneum associated sometimes with carcinoma, particularly with cancer of the stomach and of the ovaries. In some of these cases the fibrous thickening is limited to the wall of the stomach, in others it may affect a large part of the peritoneum. It may be impossible to recognize the existence of cancer in some of these cases without careful microscopic examination. There may be no circumscribed tumor, no ulceration of a mucous surface, and the nests of cancer cells may be relatively small and far apart. The disease may present itself to the naked eye as simply a diffuse fibroid thickening of the gastric and intestinal walls, with perhaps similar thickening of the peritoneum elsewhere. Both simple and colloid types of carcinoma may appear under this form.

There is another condition to which I should like to call attention in this connection, namely, the occurrence of richly vascularized, thin layers of new connective tissue, particularly on the pelvic peritoneum, associated with small hemorrhages and blood pigment. This condition is analogous to chronic hemorrhagic pachymeningitis, the morbid process being of the same general nature in both affections.

The chronic proliferative forms of peritonitis associated with tuberculosis are, of course, well recognized. There occur, as Dr. Nicholls has pointed out, diffuse or more circumscribed forms of peritoneal fibrosis, especially about the liver, but also over the spleen, the under surface of the diaphragm, and elsewhere, the etiology of which is very obscure.

DR. E. R. LECOUNT, Chicago—I have met several cases. One of them had to do with a liver which was encased in a shell, resembling that of a cocoanut, from which the liver could easily be lifted out; the capsule then maintained its former shape when laid on a flat surface.

I think Dr. Nicholls is to be complimented in his arrangement of these diseases, and for not becoming entangled in the subject of "pseudo-cirrhosis."

DR. A. G. NICHOLLS, Montreal—The reference made to pachymeningitis, by Dr. Welch, as a disease having some of the anatomic peculiarities of this *zuckerguss* condition, is interesting, and I am of the opinion, as he is, that there is a close analogy between this disease and what may be termed "pachyperitonitis." Cases such as I have described are not entirely new and the only point on which I would claim novelty is in the recognition of the fact, which has not been brought out before, that the *zuckerguss* form of peritonitis has at least a threefold etiology—simple, tubercular and carcinomatous.

THE GROWTH OF THE TUBERCLE BACILLUS AND ORGANISMS RESEMBLING IT ON FRUITS AND VEGETABLES.*

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At one time the tubercle bacillus was looked on as standing in a class by itself, sharply differentiated from all other micro-organisms, but not long after its recognition two important points came to light; first, that there are other organisms, especially the streptothricæ, that have the power of producing lesions resembling the tuberculous granulomata; and secondly, that there are other organisms resembling the tubercle bacillus in some of its biologic and staining characteristics.

The fact that the tubercle bacillus stains with difficulty and decolorizes with corresponding difficulty was for a long time regarded as peculiar to this organism. This staining peculiarity was looked on as a definite and final test, quite as specific as a chemical reaction. But now we know a whole group of acid-proof bacteria widely distributed in Nature, that resemble the tubercle bacillus closely enough in certain features to cause confusion and errors in diagnosis. These organisms are found in butter, milk, on grass, in manure, and even in certain lesions in the body.

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Pathology and Physiology, and approved for publication by the Executive Committee: Drs. Alfred Stengel, L. Hektoen and Winfield S. Hall.

They have been found, for instance, in an ovarian cyst and in the nasal secretion of healthy and diseased mucous membranes; also in sputum. They stain with carbol-fuchsin exactly similar to the tubercle bacillus and resist the decolorizing action of alcohol and acids, that is to say, they are acid-proof.

While these bacteria may readily be distinguished from the true tubercle bacillus by their cultural characteristics or by their pathogenic action in animals, it may readily be seen how they have been the source of error in diagnosis and how they have further complicated the difficult problems of tuberculosis. Some of these organisms stain and decolorize more readily than others. That is to say, they do not all have the same high degree of acid-proof qualities presented by the tubercle bacillus itself. Therefore this also causes confusion in the study of leprosy, especially in staining the *Bacillus leprœ* in nasal secretions.

We can no longer make a scientific diagnosis of tuberculosis by simply staining the bacilli in the sputum, although for clinical purposes this method remains useful. It is necessary to isolate the organism in pure culture and study its pathogenic action on animals. This takes a long time, often a matter of weeks and months.

Therefore, the problem confronts us of finding a media on which the tubercle bacillus will grow quickly in order to save time, and thereby render the process of cultivation a practical one for clinical work.

Of the various media tested we have so far had best success with certain vegetables and fruits. While this work which I am now presenting to you is not yet completed, I am at present able to state that there are vegetables on which the tubercle bacillus grows quite as well, if not better, than on potato. Beet and cauliflower seem especially favorable. Sometimes the growth appears more quickly on these vegetables than on potato.

A good growth of the human variety has been obtained on the following: potato, cabbage, cauliflower, turnip, carrot, squash, celery, egg plant, beet and radish, and a small or doubtful growth on apple, onion, cocoanut and pineapple.

It is nothing new to grow micro-organisms on vegetable media, although I have not heard of anyone growing the tubercle bacillus on the various substances mentioned, except potato.

For comparison with the tubercle bacillus, I herewith present for your consideration growths on the same fruits and vegetables, of avian tuberculosis, bovine tuberculosis, Karlinski's bacillus of nasal secretion, Rabinovitch's bacillus of butter and margarine, and Moeller's grass bacillus. These growths present a very suggestive picture. We seem to have here a tubercle group, just as we have a colon group. There is a very considerable difference between the extremes of this tubercle group, also several remarkable points of resemblance. If the tubercle bacillus of man has been specialized by a process of evolution from the more lowly grass bacillus of Moeller, or if the grass bacillus is a degenerate saprophytic form of the tubercle bacillus there are several missing links between the two. The saprophytic acid-proof organisms resembling the human tubercle bacillus grow readily on the ordinary media used in the laboratory, both at room temperature and in the incubator. A visible growth is often obtained over night. They also have more color than the tubercle bacillus, usually a salmon-red or yellowish tint. The human tubercle bacillus grows as a crinkled, rugous, dry, mould-like mass. Some of the cultures of the acid-proof organisms resembling the human bacillus have a dry, corrugated growth on various fruits and vegetables which is very suggestive.

These few remarks are only given with the specimens herewith presented as a preliminary note of the work now being done on this group of micro-organisms in the hygienic laboratory of the Marine-Hospital Service, and a further report will be made at a later date.

DISCUSSION.

DR. JOSEPH MCFARLAND, Philadelphia—Did the growth take place in direct proportion to the amount of sugar these vegetables contained?

DR. C. A. SMITH, Atlanta, Ga.—How does Dr. Rosenau prepare his media?

DR. M. J. ROSENAU, Washington, D. C.—The media are prepared just as we prepare potatoes as a culture medium in test tubes. With an apple corer I cut out a solid plug of the fruit or vegetable, this cylinder is cut in two and each half is placed in a test tube in the bottom of which is some 5 per cent. glycerin bouillon. This is then sterilized fractionally on a number of successive days. Those we prepared to keep through the winter were saturated with glycerin bouillon by filling the test tube almost full, and when we are ready to use the media we pour off the excess of fluid, leaving only enough at the bottom to keep the vegetable moist.

As to the relation between the amount of sugar in the different vegetables and the growth obtained thereon, this is a very interesting feature. I have not gone into this at all yet, but am doing so from another standpoint and hope to be able to say more about it another time.

THE DIAGNOSIS OF BRAIN ABSCESSES.*

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We encounter difficulty in diagnosing brain abscesses in two ways: First, in determining whether or not an abscess is present, and in the second place, in locating it. These difficulties are entirely out of proportion to the difficulty found in diagnosing other brain lesions, say, for instance, tumors and cysts. In the former condition the symptoms are not only frequently obscure and indefinite, but for a considerable period may be absent altogether; the abscess may be in a latent state. In tumors and cysts time is not of such very great importance, a few days or a few weeks may elapse and the diagnostic points may be allowed to develop themselves, without there being any added perils to the patient. In abscess, however, time is of great importance, a few days, even twenty-four hours, may determine whether or not the individual's life can be saved. It is in the latent or developmental period of a brain abscess that surgical interference offers the best chances; when the abscess has ruptured and the stage of manifest development has set in, the outcome of the surgical interference is, to say the least, very doubtful. The great problem, therefore, is to be able to diagnose the presence and if possible locate an abscess in its latent period or at least in the very earliest stage of its period of positive manifestation.

In order to bring this subject before the section I am going to cite for you a number of cases which were either operated on or which were suspected of having brain abscesses and in which the subsequent develop-

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Nervous and Mental Diseases, and approved for publication by the Executive Committee: Drs. Frederick Peterson, Richard Dewey and H. A. Tomlinson.