

Anthropologists have long desired some means of calculating the capacities of the crania of living individuals, and recently Dr. Lee and Professor Karl Pearson have constructed formulæ by means of which the capacity may be deduced if the length, breadth, and the height, measured from the bi-auricular line, are known.<sup>2</sup> The formula to be used in measuring the capacity of the male skull is: Capacity equals  $0.000337 (\text{length} - 11) \times (\text{breadth} - 11) \times (\text{height} - 11) + 406.01$ ; and for the female skull: Capacity equals  $0.000400 (\text{length} - 11) \times (\text{breadth} - 11) \times (\text{height} - 11) + 206.60$ ; the length, breadth, and height being stated in millimetres, and the capacity in cubic centimetres. Dr. Lee and Professor Pearson have utilised these formulæ in estimating the cranial capacities of individuals whose intellectual capabilities are known, and they have arrived at the conclusions that "there is no marked correlation between skull capacity and intellectual power in the case of either sex alone," and that "our present data present nothing to encourage the belief that there is a relation between brain weight and brain power."

### THE CAUSATION OF CANCER.

#### THE GERMAN COMMITTEE ON CANCER INVESTIGATION.

In a recent number of the BRITISH MEDICAL JOURNAL<sup>3</sup> reference was made to a meeting of the German Committee on Cancer Investigation. This Committee was organised by Professor von Leyden, and held its first meeting under his presidency on February 18th, 1900. At this meeting Professor von Leyden delivered an introductory address<sup>4</sup> in which he referred to the considerable amount of statistical work, principally German and English, which had been already done on the subject, and indicated the directions which it was suggested the Committee should take in their investigations. Collaboration was invited from all sides, and the statistics furnished in this way would be analysed from all possible points of view. In this way he hoped that many obscure points with regard to the influence of heredity, age, locality, climate, occupation, etc., would be elucidated. He showed how these questions were capable of throwing light on the unsolved problem of the nature of cancer, and especially on the theory of its parasitic nature, which in his opinion was alone in agreement with biological doctrines and the facts of research.

A discussion followed on the increase of the disease as shown in statistics. Professor Kirchner produced statistics relating to the state of Prussia, which showed that the deaths from cancer per 10,000 living had risen in the period 1888-97 from 3.73 to 5.29 in the case of men, and from 4.45 to 6.05 in the case of women. Statistics from sixteen towns of over 100,000 inhabitants gave similar results, but showed a much higher prevalence of the disease in some localities than in others.

Dr. Hirschberg's statistics from Berlin showed a steady increase in the mortality per million living from 657 men and 1,126 women in 1876 to 1,537 men and 1,775 women in the year 1895. A consideration of the cases occurring in old age showed that the increase was not amongst these.

The second meeting of the Committee on March 21st, 1900, was occupied chiefly by addresses by Dr. L. Pfeiffer and Dr. Behla. Dr. Pfeiffer remarked that the disease should be investigated in a twofold direction: first, clinical and statistical, in which attention was paid to the subjects of cancer from the points of view of age, manner of life, locality, etc.; and, secondly, the disease was to be studied from the histological standpoint. Of the two, the latter was the most important. Statistics, he believed, were not sufficiently exact to allow of any certain doctrine being based upon them; if, however, all operation and *post-mortem* material were investigated in the laboratories, and if an agreement were come to on the interpretation of the term carcinoma, to the exclusion of other malignant growths, statistics would then be valuable in showing whether it was true that carcinoma was on the increase, and whether it occurred endemically. He had for fifteen years made a special study of the obligate cell para-

sites of the sporozoa group, and especially of the growths caused by such sporozoa, but among them was not numbered the true and exact cause of cancer. His preparations, however, showed how epithelial cells and muscle cells might be invaded by sporozoa—for example, the myxo-sporidiae and sarco-sporidiae, and a tumour growth result either locally or in a disseminated fashion. He hoped for much from a continuation of these studies.

Dr. Behla brought before the notice of the Committee statistics from the town of Luckau, which went to show that the disease was exceedingly common in certain quarters, particularly in one low-lying suburb, while another suburb was, with the exception of a few cases, quite free. He spoke of the disease as endemic in the suburb in question, and had endeavoured to trace it to the water supply, a surface supply which was used for drinking, washing, and other household purposes, and for the irrigation of the nursery gardens which were common in the locality. In this water forms of low animal and vegetable life were common, and of these he had especially investigated the plasmidiophora brassicæ, which was the cause of the well-known "club root" in turnips and cabbages. He had also made some researches on the merulius lacrymans, the cause of "dry rot," but in neither case had he been able to demonstrate any particular pathogenic properties; the latter organism had been investigated because he had found that the houses in which the disease was most common were those with dark and damp cellars in which "dry rot" was abundant. Behla expressed the opinion that researches on the experimental production of cancer in animals susceptible to it gave greater promise for the elucidation of the problem than the methods designed for the isolation of the parasite from tumours.

The members of the Committee have since this time held several meetings, at which they have added to their number representatives of many medical and public institutions. The material collected will no doubt be carefully and critically analysed, and the conclusions drawn from this analysis cannot fail to be highly instructive. Such statistical studies have of course their limit of usefulness, but their value is for the present enhanced by the difficulties which appear to be associated with the direct methods of investigation. It may be that laboratory research will obtain valuable assistance and guidance from the results of such investigations, even though, from their nature, their share in the work can only be partial and preliminary. The difficulties of direct research referred to by Dr. Behla will undoubtedly be overcome, have indeed been overcome, by some investigators as far as they refer to the culture of the parasite. Not that the parasite and its culture have been indisputably demonstrated to the satisfaction of all critics, but at least there have been published quite a considerable number of researches which claim success up to this point. Assuming the correctness of these records, many difficulties must surround further progress and the experimental production of true carcinoma by inoculation; in spite of claims from one or two directions no successful series of results of this nature has yet been published.

The presentation of the report of the German Cancer Committee gave occasion to a debate at a recent sitting of the Prussian House of Lords. Count von Hutten-Czapski, in discussing the budget of the Cultus Minister, dwelt on the importance of the research to the public, and urged that the work of the Committee was deserving not only of recognition but of material support. He added that before long they would have to consider the question of erecting a special institute for the investigation of cancer and hospitals for the reception of patients suffering from the disease. The Minister replied that the Committee already received a grant from the State, and that the medical department would do all in its power to promote the work.

#### PARASITES PRESENT IN CARCINOMA AND SARCOMA.

The volume on the parasites of human carcinoma and sarcoma, by Professor Max Schüller,<sup>5</sup> is undoubtedly one of the most valuable and most scientifically conceived publications on the subject that has yet appeared. Some of the

<sup>2</sup> Data for the Problem of Evolution in Man.—VI. A First Study of the Correlation of the Human Skull, *Philosophical Transactions of the Royal Society of London*. Series A, vol. cxcvi, pp. 225-264.

<sup>3</sup> BRITISH MEDICAL JOURNAL, May 4th, 1901, p. 1103.

<sup>4</sup> *Deut. med. Woch.*, Dunder-Bellage, May 9th, 1901.

<sup>5</sup> *Die Parasiten im Krebs und Sarkom des Menschen* [The Parasites in Human Cancer and Sarcoma]. Von Professor Dr. Max Schüller. Jena; G. Fischer. 1901. (Royal 8vo, pp. 128, 3 coloured plates. 64 illustrations in the text.)

researches therein described have already been noticed in this JOURNAL.<sup>6</sup> The first chapters are devoted to a description of the method of culture which has been employed—that of incubating portions of the new growths themselves, while taking the most careful precautions against exposure to a temperature lower than the body temperature. Two characteristic forms of the cultivated organism are described—a young small golden-coloured form, and a larger which consists of a capsule enclosing bodies morphologically similar to the small forms. It is stated that the latter develop into the capsulated forms. These organisms were grown from sarcomata as well as from carcinomata. Cultures were inoculated into the organs and tissues of animals, especially rabbits, and the results studied histologically.

Schüller states his opinion that by such experiments it is not possible to produce all the complicated structural transformations which go to make up human carcinoma, but compares the changes which he recognises as those of early human carcinoma with those which follow the introduction into animal tissues of the organism isolated, and maintains their identity. These changes consist essentially of local proliferation; the parasites appeared capable of stimulating this proliferation in whatever organ or tissue they were introduced—for example, a carcinoma culture was capable of originating a sarcoma-like growth in connective tissue. The histology of early carcinoma is carefully described, the enlargement, hyperchromatosis, and active mitosis of the nuclei, and the resulting proliferation and emancipation of the cells; it is then shown that similar changes can be seen in the sections of new formations following the introduction of the parasite.

We do not think it is hypercritical to suggest that as good a case might be made out for the granulomatous character of these new formations. It must be remembered that the characteristics of carcinoma have not been exhaustively enumerated when the cellular changes seen under the high powers of the microscope have been described. As far as we are aware no observer has yet been able to produce by inoculation growths in which the remarkable infiltrative character of true carcinomatous growth has not been conspicuous by its absence. Not that there is any obscurity about the infiltration of carcinoma unassociated with the obscurity attached to the problem of carcinomatous growth as a whole; but a proliferation from which this characteristic is absent is a widely different process from one of which it is the chief peculiarity, unless we accept the teaching of Cohnheim that malignancy is altogether a question of the degree of resistance offered by surrounding tissues, and even Cohnheim did not consistently adhere to this view. We repeat our opinion of the value of the researches described in this volume, but their special worth is the remarkable confirmation of the fact that certain parasites with definite characteristics can be demonstrated by suitable methods of culture in sarcomata and carcinoma. Scattered throughout the text are a large number of sketches which well illustrate the various points which the author wishes to bring out.

## THE PLAGUE.

### PREVALENCE OF THE DISEASE.

#### CAPETOWN.

ON May 18th, after a week's immunity, 14 fresh cases of plague were reported, 5 of the cases being Europeans. A later telegram, dated May 20th, states that "3 more cases were reported to-day." Plague is evidently subsiding in Capetown, but the disease has not disappeared entirely. Professor W. R. Simpson has, in company with the Government authorities, been making an official tour of inspection of several of the ports and towns in the Colony, and so far no cases of plague have been discovered beyond Capetown; the area of infection therefore remains unaltered. The cold weather is just commencing at the Cape, so it is possible an abatement or complete disappearance of the disease may be hoped for. It would, however, be idle to assume that all danger of recurrence is over.

#### PORT ELIZABETH.

A telegram, dated May 22nd, states that "4 cases of bubonic plague have been notified at Port Elizabeth to-day; one death has occurred."

#### INDIA.

A further decrease in the number of deaths from plague in India is reported. For the week ending April 27th the number of deaths from this disease for all India amounted to 4,093, compared with 6,304 for the week ending April 20th.

In Bombay the number of plague deaths during the week ending April

27th amounted to 403, or 56 fewer than during the previous week. The most satisfactory feature of the decline is the continued relaxation of mortality from plague in the more densely-populated districts of the city.

In the Bombay Presidency the plague deaths have fallen in number during the same period from 570 to 468.

In Calcutta the deaths from plague have fallen from 389 during the week ending April 20th, to 215 in the week ending April 27th, and in the Bengal Presidency from 3,258 to 1,707.

There has been a slight increase in the Punjab and Kashmir, the figures having risen from 518 to 547 in the former, and from 25 to 33 in the latter State during the weeks ending April 20th and 27th respectively. In several villages in the Jullunder district plague has reappeared, pneumonic plague playing a considerable part. Disturbances broke out on April 25th at Schzadi, near Sialkot, when the Assistant Commissioner and a party of police were attacked. The outbreak occurred in consequence of the appointment of a native doctor to inspect women suspected of suffering from plague.

#### MAURITIUS.

For the week ending May 16th one case of plague occurred in Mauritius.

#### AUSTRALIA.

In Perth and Brisbane a few cases of plague continue to occur, but at neither place has the outbreak been serious.

## GRANTS FOR SCIENTIFIC RESEARCH.

THE Council of the British Medical Association desires to remind members of the profession engaged in researches for the advancement of medicine and the allied sciences that it is prepared to receive applications for grants in aid of such research. Applications for sums to be granted at the next annual meeting must include details of the precise character and objects of the research which is proposed, and must be made on or before June 15th in writing addressed to the General Secretary, at the office of the Association, 429, Strand, W.C.

Reports of work done by the assistance of the Association grants belong to the Association.

#### RESEARCH SCHOLARSHIPS.

The Council of the British Medical Association is prepared to receive applications for one Research Scholarship which is vacant, of the value of £150 per annum, tenable for one year, and subject to renewal by the Council for another year.

#### THE "ERNEST HART MEMORIAL SCHOLARSHIP."

The Council is also prepared to receive applications for a Scholarship of £200 for the study of some subject in the department of State Medicine in memory of the late Mr. Ernest Hart.

Applications must be sent in writing on or before June 15th, stating the particulars of the intended research, qualification, and work done.

Forms of application for the Scholarships can be obtained from the General Secretary.

FRANCIS FOWKE, *General Secretary.*

429, Strand, May 14th, 1901.

## THE MEDICAL DEFENCE UNION.

THE annual general meeting of the Medical Defence Union will take place at the offices of the Union on Friday next, May 31st. The annual report of the Council upon the work of the Union during 1900, and the appended report of the solicitor for the same year, which will be presented to this meeting, contains a great many matters of interest, to the majority of which we can make no more than a passing reference in the present notice.

The membership increased during the year, and the number of members upon the register reached a total of 4,604.

The Council reports that the number of cases brought before it, and either dealt with by that body or handed to the solicitor, has increased, but that the actual number of cases taken into court has decreased. We are told that the long-continued rule of the Union has been "Never compromise an action," and the solicitor, in his report, gives many striking instances of the wisdom of this principle. Legal proceedings have been taken against a member of the Union, defended by it, and have been carried on up to, or almost up to, the moment of trial, and have then been dropped; the motive suggested for maintaining the action is the hope that a compromise might at some point of the weary period of waiting be accepted by the Union for its member. The principle has the further advantage that solicitors who undertake cases involving charges of malpraxis and negligence

<sup>6</sup> BRITISH MEDICAL JOURNAL, November 24th, 1900, p. 1518.