

Reviewing the results of seven years' work on the comparative and experimental investigation of cancer, says the general superintendent in his report, one is struck by the difference between the nature of the problems before us seven years ago and of those now being considered, as well as by the freedom one feels in investigating the problems presented to-day, without the incubus of having to consider them from the standpoints of the many hypotheses now proved to be untenable. I do not think that too much is claimed by asserting that the arduous labour of the past seven years is gradually effecting, and in several respects has actually effected, a complete revolution in many aspects of the cancer problem. But it has done still more in opening up new vistas in biology. Seven years ago no one conceived it possible that portions of the mammalian organism could be kept growing for a period four times the length of life of the whole animal. But to-day the number of different kinds of tissues now being propagated separately make it theoretically possible that the majority of the tissues may be so grown and segregated. In other words, a living animal can be analysed into many of its living component tissues. The finer relations of various kinds of tissues to one another have been revealed by the application of the new methods. The biological alterations which living mammalian cells may undergo suddenly, as well as gradually, under the influence of experimental conditions, can now be studied. These and many other achievements in the field of general biology are the most important practical fruits which have accrued from the experimental study of cancer, upon which they have only indirect bearings. Ultimately they are bound to be of far-reaching general biological importance, although to-day they are merely the weapons that have been forged to attack cancer. Their further development and their utilisation for the solution of purely biological problems will probably precede the solution of many of the problems surrounding the nature and causes of cancer.

While some chance opportunity may yield results of immediate practical moment, the outlook on therapeutics in the meantime is in the direction of preventing dissemination or metastasis. The means of explaining why inoculated cancer can undergo spontaneous cure have been greatly enriched by the acquisition of fresh strains of propagable tumours behaving in a variety of ways in this respect, and presenting all gradations from some growing progressively in every animal inoculated, to others which, while developing for a time in every animal, are ultimately got rid of in all cases by the active resistance which the tumours induce against themselves.

In acknowledging a vote of thanks, the Prince of Wales said, during the course of his remarks:—"When presiding over this committee on previous occasions I have expressed the view that immediate results in regard to the cure of cancer must not be counted upon, but that rather we must look forward to steady and consistent progress in accordance with the experience of all scientific investigation. There can be no doubt, however, that the seven years' work already accomplished by the fund has brought about a complete change in the standpoints from which cancer should be studied. The many and varied lines of research are being pursued with the utmost perseverance, and every development, as it occurs, is followed up with the minutest care. During the past year an important work—the third scientific report—has been issued from our laboratories, and has been received with appreciation by all those at home and abroad who are competent to express opinions on these highly technical researches. This of itself marks a steady and valuable advance, and one of which we have every reason to be satisfied.

SCOTTISH EXPEDITION TO SPITSBERGEN.

DR. WILLIAM S. BRUCE, of the Scottish Oceanographical Laboratory, is conducting another expedition to Prince Charles Foreland and other parts of Spitsbergen. One of the chief objects of the expedition is to complete the survey of Prince Charles Foreland which he began in association with H.S.H. the Prince of Monaco in 1906 and continued in 1907. He will also connect this sur-

vey with the mainland of Spitsbergen across Foul Sound, thus joining up the work of H.S.H. the Prince of Monaco, the late Captain Guisnez, Captain Bourée, and Captain Isachsen in the north-west of Spitsbergen.

In 1907, Dr. Bruce brought back geological collections which have been described by Dr. G. W. Lee, of H.M. Geological Survey of Scotland, in a paper read to the Royal Physical Society, Edinburgh. These rocks and fossils entirely change previous opinions of the geology of Prince Charles Foreland, which was thought to be Silurian, whereas the rocks of Prince Charles Foreland consist, first, of a series of metamorphic crystalline schists, quartzites, and non-fossiliferous shales and hard grey limestones; secondly, of the fossiliferous limestone, probably permo-Carboniferous; and, thirdly, of grey shales containing the remains of dicotyledonous plants of Tertiary age. This time Dr. Bruce will carry with him a specially strong geological staff, and he hopes to clear up definitely the whole geology of Prince Charles Foreland and the neighbouring coasts of the mainland.

A special study of the botany of the Foreland will be made, Dr. Rudmose Brown carrying on that special part of the work. Dr. Bruce's staff consists of Mr. J. V. Burn Murdoch, who accompanied him to Prince Charles Foreland in 1907; Mr. John Mathieson, of H.M. Ordnance Survey of Scotland, who will take entire charge of the survey work; Dr. R. N. Rudmose Brown, late botanist of the *Scotia*, at present lecturer on geography, Sheffield University; Mr. Ernest A. Miller, who accompanied Dr. Bruce in 1906, and has since been attached to the meteorological and magnetical service of the Argentine Republic, having wintered at Scotia Bay, South Orkneys, during the last year. Mr. H. Hannay and Mr. A. M. Peach are the geologists, and Mr. Alastair Geddes will also accompany the expedition.

Dr. Bruce has chartered the steamer *Conqueror*, which is being specially re-fitted for the purpose, and has selected as master of the ship Captain Francis Napier, who has been kindly lent by Messrs. James Currie and Co., Leith. The expedition will leave Leith on Monday next, July 19, and is expected to be absent about two months.

We understand that this expedition, which will be Dr. Bruce's ninth visit to the polar regions, in no way interferes with his future Antarctic plans.

BIRD NOTES.

TO the May number of *Nature* Mr. O. J. Lie-Petersen contributes an account of the life-history of the icterine tree-warbler (*Hypolais icterina* or *H. hypolais*) in Norway, where it is known as the "bastard nattergale." The dates of arrival in the neighbourhood of Bergen during a period of eleven years range from May 16–20 inclusive; birds of the year take their departure about the middle of July, and old birds some weeks later. By the middle of August nearly all have vanished, although an occasional straggler may be seen up to the end of that month, and one specimen was so late as September. Among the trees haunted by this species the hazel is the favourite; nesting takes place at the end of May or early part of June, and the period of incubation is thirteen days.

The April number of the *Emu* contains the minutes of a conference on Government bird-protection in Australia, held at Melbourne in November, 1908. A large number of species and subspecies were recommended for total protection, among these being lyre-birds, coachwhip-birds, emeus, and cassowaries. Owing, however, to the conference being unable to prepare a protection Bill, on account of the relations existing between the Commonwealth and its constituent States, it was eventually decided that the list of species and groups recommended for protection should be submitted to each State for favourable consideration. The urgent need for efficient legislation in this direction is made evident by a statement on another page of the same issue with regard to a recent wholesale slaughter of emeus.

To Mr. L. J. Cole we are indebted for a copy of a paper from the April number of the *Auk* on the importance of "tagging," or marking, birds as a means of studying their movements. It is pointed out by the author that we are still nearly as much in the dark as regards the true

"inwardness" of migration as was the case a century ago, and that practically all our information on this subject is connected with mass-movements, so that we are ignorant of the wanderings of individual birds. The acquisition of a knowledge of such individual movements will, it is urged, aid, not only in the study of the general migration of species, but will assist in analysing the factors connected with migration as a whole. Active measures are being taken to inaugurate a system of bird-marking in the United States.

A similar movement has been started in this country by Mr. H. F. Witherby, the editor of *British Birds*, the details of which will be found in the June issue of that serial. The rings used for marking are extremely light, and do not in any way interfere with the bird's power of flight; each is stamped "Witherby, High Holborn, London," and bears a distinctive number, which in the smaller sizes is stamped inside the ring, and it is hoped that anyone into whose hands should fall a bird so marked will send the bird and the ring, or, if this is not possible, then the particulars of the number on the ring, the species of bird, and the locality and date of capture, to the address given.

Yet another centre for bird-marking is to be established at Aberdeen, as announced in the June number of *British Birds*.

The history of the rise and progress of ornithology in South Africa is presented in concise and popular form by Mr. A. Haagner in *Popular Bulletin No. 2* of the South African Ornithologists' Union, recently published at Pretoria.

To No. 1670 of the Proceedings of the U.S. National Museum Mr. E. A. Mearns contributes a paper on new and rare birds from the Philippines, while in No. 1683 of this serial the same author gives a list of birds recently collected in the Philippines, Borneo, and certain other Malay islands.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

DR. E. KNECHT has been appointed professor of technological chemistry in the University of Manchester.

FROM the *Observatory* we learn that Mr. J. Lunt, astrophysical assistant at the Cape Observatory, has been given the honorary degree of D.Sc. by the University of Manchester.

THE annual meeting of the Midland Agricultural and Dairy College will be held on Monday, July 26, when the report on the year's work will be presented. The Duke of Rutland will address the meeting, and present the diplomas and certificates gained during last session.

MERELY to mention the titles of four of the six articles contained in the February-March issue of the *Southern Educational Review* is to demonstrate the importance its editor attaches to the education of the negro. These articles are those on "Results of Attempts at the Higher Education of the Negro of the South," "The Essential Requirements of Negro Education," "Negro Rural Schools," and "Relation of the State to the Education of the Negro." The review is published at Chattanooga, Tenn., U.S.A., by the editor, Mr. H. Elmer Bierly.

It is proposed to establish in connection with the Paris University a system of exchange between French and foreign professors on similar lines to that which has for some time been in vogue between Berlin and America. M. Liard, rector of the university, has made an appeal to the friends of the university to create a fund for the purpose. M. Albert Kahn has placed at the disposal of the rector an annual grant of 30,000 francs for five years. The *Revue scientifique* states that two million francs are necessary for the success of the scheme.

It is announced by the New York correspondent of the *Times* that Mr. John D. Rockefeller has celebrated his seventieth birthday by giving 2,000,000l. to the General Education Board, which he founded in 1907 for the pur-

pose of endowing American colleges and universities. The Board had already received 8,600,000l. from him. Some forty institutions of higher education have benefited by this trust, including Harvard and Yale Universities. The correspondent states that the Board's policy is governed by the belief that every city of more than 100,000 inhabitants should possess a college. The annual income of the Board is said to be 200,000l.

THE accounts of the London Polytechnics for the year ended July 31, 1908, have been printed by the London County Council. The council's comptroller points out that the total ordinary receipts of these eleven institutions amounted to 212,495l., an increase of 8,543l. over the previous year. The council's grants amounted to 80,503l., or 37.88 per cent. of the total receipts. Grants from the Board of Education amounted to 38,229l., or 17.99 per cent.; the sums received from the City Parochial Foundation were 27,704l., or 13.04 per cent., and from City companies, &c., 6,929l., or 3.26 per cent. The total ordinary expenditure on revenue account of all the polytechnics amounted to 211,950l., an increase of 4,431l. over the previous year. Taking the results as a whole, so far as ordinary income and expenditure are concerned, there was a surplus of 545l. on the institutions, as compared with a deficit of 3,567l. in 1906-7. The amount expended on teachers' salaries reached 99,286l., or 47.84 of the total expenditure; other salaries accounted for 25,509l., or 12.30 per cent.; rent, rates, and taxes absorbed 11,586l., or 5.58 per cent.; and apparatus and other educational appliances and furniture cost 18,327l., or 8.83 per cent. of the total expenditure.

TEACHERS at agricultural schools and colleges in this country will be interested in the full and detailed syllabus issued by the Colorado State Agricultural College. The requirements for admission strike an English teacher as severe, and we can only congratulate the Colorado College if it is in a position to insist on the high standard they imply. The student is expected to have a certain acquaintance with English literature, gained by reading specified classics, and to be "familiar with the essential principles of rhetoric," including the following:—"choice of words, structure of sentences and paragraphs, the principles of narration, description, exposition, and argument." History is another essential subject, and the teacher who is preparing pupils for the college is informed that "the mere learning of a text will not give the preparation that the colleges desire. Effort should be made to cultivate the power of handling facts and of drawing proper deductions from data, to develop the faculty of discrimination, to teach the pupils the use of books, and how to extract substance from the printed page." The other subjects—mathematics, chemistry, physics, "other languages"—are to be taught in a similar spirit. Students so trained would form admirable raw material, and could have no great difficulty in taking the fullest advantage of the college course.

THE Board of Education has issued [Cd. 4736] its regulations for technical schools, schools of art, and other forms of provision of further education in England and Wales which will come into force on August 1 next. No changes of special importance have been made as compared with those of last year. It is satisfactory to note that the amount of each of the royal exhibitions, &c., tenable at the Royal College of Art and the Imperial College of Science and Technology, South Kensington, has been raised from 50l. to 60l. per session. The old royal exhibitions and national scholarships tenable at the Imperial College of Science and Technology, have been combined as royal scholarships, the competition for which is to be conducted on the lines hitherto adopted for the award of national scholarships. In place of the former students-in-training in science, the Board of Education has established special studentships for teachers of science and technology who are qualified to enter on the third or fourth year of the course provided at the Imperial College. We notice that in future such teachers-in-training are not to be permitted to continue for more than two years in all at the Imperial College, a change which, in view of the need for highly qualified teachers in our provincial schools of science and technology, seems of doubtful wisdom.