arctic polar basin; if this generation does not learn the secrets of the palæocrystal ice, another can and will do so.

Our future naturalist will certainly and most justly complain if we busy ourselves with problems that can wait, that he can solve as well as we, and at the same time neglect to do that work which we alone can do. Our first and immediate duty is to save for science vanishing knowledge; this should be the watchword of the present day.

Those students of botany, zoology, and anthropology who have at all considered the matter, are impressed with the fact that the present is a very critical time for the native flora and fauna of many parts of the world. Owing to the spread of commerce, the effects of colonisation, and the intentional or accidental importation of plants and animals, a very rapid change is affecting the character of the indigenous life of numerous districts. This is notably the case in oceanic islands, the area of which is often extremely limited, and as a consequence the native forms are the more likely to be swamped by the immigrants; but it is just those spots which are of especial interest to the naturalist, on account of their isolation from the great land areas. Thus the flora and fauna of many of the districts most interesting to the field-naturalist are in our day becoming largely exterminated before they have been adequately recorded. The investigation of disappearing animals and plants can, in many cases, be undertaken by us alone—and even now much has disappeared and more is fast passing away. It is, perhaps, scarcely necessary to point out that this investigation is not a matter of interest to the systematist only, but it is of great importance in connection with the problems of the geographical distribution of animals and plants which open up such fascinating vistas of the extension of continents in former ages, and of their partial submergence; not to speak of the bearing of specific and individual varieties on the intricate questions of the origin of species; or the adaptation of those peculiar forms to their particular localities, and those wonderful inter-relations between plants and plants, plants and animals, or between animals and animals, and between all and their environment.

Some years ago a Committee was appointed to investigate the zoology of the Sandwich Islands, and they sent out Mr. R. C. L. Perkins, who has done most excellent work. His researches in the Hawaiian group prove that quite a noticeable decrease in the indigenous fauna is taking place each season. The district around Honolulu was perhaps originally the richest in endemic forms, but now introduced forms are in vast preponderance; the distinctive fauna of the plains, if there was one, has quite disappeared. Captain Cook found certain birds, for example, near the shore; of these, some are extinct, and others are to be found only in the mountains. In a letter recently received, by Dr. D. Sharp, dated from Lihue, Kauai, he states: "This place has been a dead failure. The country where I camped here was a low-lying, densely-covered forest bog-land, at first sight a paradise for Carabidæ (ground beetles), and differing from any other place known to me. Its fauna is entirely lost for ever. I turned during my stay thousands of logs, any one of which at 4000 feet would have yielded Carabidæ; of all these there was not a single one under which *Pheidole megacephala* had not a nest, and I never beat a tree without this ant coming down in scores." This is an introduced ant which is overrunning the islands, and which exterminates the native insect fauna. Mr. Perkins finds that earwigs alone can withstand this ant, and his only chance of collecting endemic insects is to get ahead of the ant. The area of the whole group is somewhat larger than Yorkshire. If the diminution of the fauna is so marked in such a comparatively large group as the Hawaiian Islands, how much greater must it be in the small islands.

Mr. Knight, in his entertaining book "The Cruise of the *Falcon*," describes the prostrate forests of the island of Trinidad in the South Atlantic. We never can know what was the nature and extent of this vanished flora and fauna.

What is taking place in the small islands holds good to a somewhat less extent for the larger ones. In New Zealand the Government is taking steps to preserve certain well-known vestiges of its ancient fauna which are in imminent danger of extermination; but it does not interest itself in the inconspicuous forms, which are subject to the same danger, nor does the New Zealand Government systematically investigate the existing fauna of the group.

It is necessary that such investigations should be undertaken by competent naturalists. They should not only be good collectors, but keen observers, in fact, naturalists in the true sense of the term; for unless the work is well done, it had almost be better left undone. There are many examples of collecting being so imperfectly done as to lead to very erroneous conclusions. It takes time for a naturalist to become acquainted with the local types. The endemics do not show themselves, as usually the conditions of life are such that insects, for example, live retired lives and are not seen, while those that manifest themselves are often foreigners.

The extermination of animal life is more rapid and striking than that of plants, but what has been stated for animals must be applied to plants as well.

Not less important than the foregoing is the study of the anthropology of these districts. The Tasmanians have entirely disappeared, and we know extremely little about this interesting people. In many islands the natives are fast dying out, and in more they have become so modified by contact with the white man and by crossings due to deportation by Europeans, that immediate steps are necessary to record the anthropological data that remain. Only those who have a personal acquaintance with Oceania, or those who have carefully followed the recent literature of the subject, can have an idea of the pressing need there is for prompt action. No one can deny that it is our bounden duty to record the physical characteristics, the handicrafts, the psychology, ceremonial observances and religious beliefs of vanishing peoples; this also is a work which in many cases can alone be accomplished by the present generation.

The late Prof. H. N. Moseley was so impressed with this fact during his voyage on H.M.S. *Challenger*, that he concluded his "Notes by a Naturalist on the *Challenger*" by pointing out that the physical conditions and fauna of the sea can be investigated at leisure at any future time. "On the surface of the earth, however, animals and plants and races of men are perishing rapidly day by day, and will soon be, like the Dodo, things of the past. The history of these things once gone can never be recovered, but must remain for ever a gap in the knowledge of mankind. The loss will be most deeply felt in the province of Anthropology, a science which is of higher importance to us than any other as treating of the developmental history of our own species. The languages of Polynesia are being rapidly destroyed or mutilated, and the opportunity of obtaining accurate information concerning these and the native habits of culture will soon have passed away. The urgent necessity of the present day is a scientific circumnavigating expedition which shall visit the least-known inhabited islands of the Pacific, and at the same time explore the islands which yet remain almost or entirely unknown as regards their botany and zoology; these promise to yield results of the highest interest if only the matter be taken in hand in time."

There is no difficulty in finding men willing and competent to undertake such investigations if the funds were forthcoming; experience has shown that an annual sum of at least 400*l.* is necessary to equip and maintain one naturalist.

Here, then, is a great opportunity for the millionaire. No one doubts that the work is worth doing; it is essential that it should be done at once: capable men are ready to undertake it—only the means are lacking.

The British Association has appointed a Committee to report on this matter, of which Sir William Flower, Director of the Natural History Museum, South Kensington, is the Chairman, and the present writer the Secretary; so there exists a machinery ready to be put in action when funds are available. Will not one wealthy man, or a syndicate of rich men, contribute to do this work for the world? The opportunity if neglected is lost for ever.

A. C. HADDON.

SIR MARTIN CONWAY'S CROSSING OF SPITZBERGEN.

SIR MARTIN CONWAY read a paper on the first crossing of Spitzbergen at the meeting of the Royal Geographical Society on January 25, illustrating his description by a series of fine lantern slides of Spitzbergen scenery. He landed at Advent bay, accompanied by Dr. J. W. Gregory, Mr. E. S. Garwood, Mr. A. Trevor-Batty, and Mr. H. E. Conway, two Norwegian sailors, and two ponies. The descriptions of previous travellers had led him to expect a series of boggy coast valleys leading up to an interior plateau covered with snow or ice, on which sledging would be practicable. The actual conditions were very different. The northern and southern parts of Spitzbergen are, in the main, covered with great accumulations of

ice, except along the west shore of Wijde bay, where is a relatively fertile area. The middle of the island, west of the main watershed, is a region of boggy valleys, fertile slopes, and mountain ridges, or the remains of a high plateau. The nature and interest of this country can be shown by a few specimen areas. The east shore of Wijde bay is formed by a long and very uniform slope, about 1000 feet high. The ice-sheet almost reaches the edge of this slope, except at a few places where the plateau has been broken down into valleys, whereby tongues of ice reach or approach the sea. That is an example of a plateau protected from denudation by ice. Along the north-east side of the Sassendal there is a similar plateau, from which, however, the ice-sheet has been withdrawn in recent times. Denudation has begun, and the plateau is being cut down by narrow and precipitous cañons, from which it derives the name Colorado Berg. These cañons are not being gradually lowered, but they are gradually creeping back. However short, all are practically of the same depth. It is at their heads that they are formed. Each is eating its way back with considerable rapidity, and the whole is the first stage of the formation of a mountain group.

From the whole area west of the Sassendal, between it and Advent bay, bounded on the north by Ice fjord, and on the south by Advent dale, the ice that once covered it appears to have been gradually withdrawn, beginning from the west. As one goes westward one comes to mountains in a more advanced stage of manufacture. The hills that look down upon the Sassendal are the bluff-fronted remains of a plateau, only a little more cut down than the Colorado Berg. Except in two cases, the valleys that penetrate them from the Sassendal are short. Further west come rounded hills, such as Mount Lusitania. Beyond De Geer valley are maturer peaks, with clearly defined arêtes and faces such as are familiar in ordinary mountain regions.

Where mountains are most developed valleys are oldest. Advent dale may be taken as type of these. As the ice retreated eastwards, Advent dale widened and crept back, receiving the drainage of a constantly developing valley-system, whose eastern watershed ran close behind the Sassendal bluffs. Later on the Sassendal tributaries became more active, and ate their way back, stealing one after another of the headwaters of Advent dale. The Esker valley is a good instance of this. It was formerly drained to Advent dale; now it drains in the opposite direction. Brent pass divides the drainages, but will not long continue so to do, for already a small stream, descending almost on to the pass, is in process of being stolen by the Esker. It now divides its waters upon its fan when in flood, one stream going to Advent dale, the other to the Esker. Fulnar valley, which formerly drained into Agardhs bay, has been similarly invaded by the Sassendal, and many more instances might be quoted.

The great interest, therefore, of this peculiar island of temperate climate in the midst of Arctic ice-sheets, lies in the fact that there is one of the very best examples in the world of the processes of mountain and valley manufacture. This fact altered the plan of the expedition, and showed that it was a far more important matter to make a fairly detailed examination of one portion (in itself, however, not inconsiderable) of Spitzbergen, than to scamper hurriedly across two or three separate belts. Sir Martin Conway and his companions crossed from sea to sea along three different lines; but, instead of being as far as possible from one another, these lines were so arranged that each should display the flank of the next. The crossings were from Advent bay to Van Mijen bay, from Van Mijen bay to Sassen bay, and from Sassen bay to Agardhs bay and back, finally returning along the shore of Sassen bay to Hyperite Hat, and completing the work by expeditions into the heart of the important mountain region which has been already referred to.

Sir Martin Conway proceeded to describe the incidents of the various journeys across the island, the journey being made both wearisome and dangerous by the constant rain, the boggy floors of the valley and the still more treacherous slopes of rotten snow. Thawing was going on very rapidly, and the rivers were so numerous, that fifty-two, which required to be forded, were counted in a single mile near the head of Advent dale. Some gleams of sunshine allowed of comprehensive views being obtained over the maze of valleys and broken plateau. The party carried on much of their work separately, thus being able not only to survey a large part of the island for the first time, but also to devote special attention to the geology and the conditions of the numerous large glaciers and innumerable moraines which were encountered.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. W. N. Shaw, F.R.S., has been appointed a member of the General Board of Studies. Mr. Middleton-Wake, the Sandar's Reader in Bibliography, will this term give a course of four lectures on the invention of printing, with special reference to book-illustration. Mr. C. H. Robinson, who has been elected University Lecturer in the Hausa language, will give an inaugural lecture on the Hausa people on February 2. Mr. E. J. Stone, F.R.S., and Prof. J. J. Thomson, F.R.S., have been nominated as examiners for the Adams prize to be awarded in 1899. Dr. Somerville is this term lecturing on agriculture and forestry at the University Chemical Laboratory. He announces also a special lecture on the "finger and toe" disease of turnips on February 6.

A SPECIAL educational supplement is published with the *Academy* of January 23. In it will be found some suggestive notes on the use of illustrations and models in teaching, and records of scholastic events in the principal public schools during the third term of 1896.

THE annual general meeting of the Association of Technical Institutions was held in the Clothworkers' Hall, London, on Friday, January 22, when the Right Hon. A. J. Mundella, M.P. (the retiring President), presided over a large attendance of members. Mr. Henry Hobhouse, M.P., was elected President for the year 1897, and delivered his inaugural address. It was resolved to request the Council to take into consideration and to report to the next general meeting as to the best means of promoting full recognition of the attainments of technological students, and also as to the best method of securing a closer co-operation with the Examination Board of the City and Guilds of London Institute; in considering this important matter the Council is to have power to co-opt such persons as it may deem desirable. The Council for the year was elected as follows:—President: Mr. Henry Hobhouse, M.P. Vice-Presidents: The Right Hon. A. J. Mundella, M.P., Mr. W. Mather. Treasurer: Councillor R. F. Martineau. Hon. Secretary: Prof. J. Wertheimer.

A NOTEWORTHY event in the annals of technical education in the United States will be the forthcoming celebration of the twenty-fifth anniversary of the Stevens Institute of Technology, on February 18 and 19. From the *Journal* of the Franklin Institute we learn that the institute was founded by the late Edwin A. Stevens, of Hoboken, N.J., and in 1870 the erection of a building was commenced. Dr. Henry Morton, at that time secretary of the Franklin Institute, was tendered the presidency of the institute, and gathered a faculty of eight members about him. To this number others have, from time to time, been added as the work of the institute increased, until at the present time the faculty includes twenty-two professors and instructors. The total number of student graduates is 675, and the number in attendance during recent years has been about 260 each year. The Stevens Institute has always taken high rank among the institutions devoted to technical education in the United States, and its twenty-five years of successful effort is amply exemplified in the work accomplished by its graduates in all departments of mechanical and electrical engineering.

FROM the Berlin correspondent of the *Lancet* we understand that there is some uneasiness in German University circles. In Germany a university student has to pay a fee each half-year for every lecture he attends, and this money becomes the property of the individual teacher. In addition to the students' fees, the professors receive a fixed salary from the Treasury; but the great majority of associate professors and *privat-docents* do not get any remuneration from the Government. In order to redress this inequality, the Government proposes to introduce a Bill providing that lecture fees exceeding 4000 marks (200*l.*) in Berlin University and 2000 marks (100*l.*) in the provincial universities shall be divided between the lecturer and the Treasury. The fund thus obtained will be used to increase the remuneration of the teaching staff of the university. The announcement of this contemplated innovation has caused a sensation among the members of the universities. They point out that the new measures will induce the members to raise the fees, and that the expense of university education will thereby be increased. The Bill would also restrict the liberty and freedom of action