depths of modern lakes, lagoons and tranquil estuaries. Tertiary coals in general, in the Northern Hemisphere, are consequently to be regarded as the result of water transport and aqueous sedimentation. Even so uncompromising an advocate of the autochthonous hypothesis as the late Professor H. Potonie, agreed that accumulations in lakes and ponds were to be regarded as allochthonous.

Recently, the writer has had the opportunity of studying brown coals of the Southern Hemisphere, in New Zealand and Australia. Here the evidence against the *in situ* or peat bog hypothesis of the origin of coal is equally decisive. The coals from a large number of New Zealand mines not only of Tertiary but also of late Cretaceous age shows organization such as is found to-day only in lacustrine or similar organic mucks. Further the woods of New Zealand coals belong to the Araucarians and Podocarps, Conifers, which are not found growing in bogs at the present time. It is not without significance too in this connection, that the official view of the Geological Survey of New Zealand, is that the coals of that country are of sedimentary or transport origin. In Australia the remarkable brown coal deposits near Morwell in the state of Victoria were examined under very favorable conditions, through the kindness of Sir Edgeworth David, of the Department of Geology, of Sydney University, and Sir John Monash, Chancellor of the University of Melbourne. These deposits are in places nearly eight hundred feet thick and in the open workings which are at present being operated are of a depth of nearly two hundred feet. In one of these are prodigious quantities of generally admirably preserved tree trunks, which in many instances have not undergone even the slightest compression. A microscopic examination of a number of these has shown that they are either Araucarian Conifers, or Proteaceae. The Araucarians are certainly not bog plants and the only reasonable explanation of their presence in coal deposits is their having been water-borne from some more or less distant site. The most characteristic Proteaceous wood present is that of the so-called silky-oak or Grevillea, which is a notable component of the well-known dry sandstone flora, so characteristic of Australia not only of to-day but as far back as the Eocene. The general organization of these coals is lacustrine like those of New Zealand and in places seams of actual oil-shale are present in the coal.

It appears advisable that more attention be given to the organization of coal, in connection with theories in regard to its origin. Certainly the prevailing views represent habit and prejudice rather than a rational consideration of the rapidly increasing body of new and significant facts. Not long since the writer was exhibiting the colored plates of his recent memoir on coal to two of his geological friends, one of whom remarked apropos of the brilliant hued illustrations, that coal did not look like that. He was advised by his fellow geologist to go and examine some coal sections. This advice may perhaps be of value in a wider circle.

It is clear from the structural study of Tertiary coals and their contained woods that these coals can not have been formed *in situ* as is generally assumed, since the woods are those of land and even desert trees. Further the general organization of brown coals closely resembles the aquatic accumulations of vegetable matter in the same regions at the present time and consequently can not be compared at all with peat.

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## PACIFIC SCIENCE ASSOCIATION

THE outstanding feature of cooperative scientific work in the Pacific for the year 1926 is the organization of the "Pacific Science Association"—the culminating action of the remarkable Science Congress which met at Tokyo, from October 30 to November 11, 1926. The objects of the association are:

(a) To initiate and promote cooperation in the study of scientific problems relating to the Pacific region, more particularly those affecting the prosperity and well-being of Pacific peoples.

(b) To strengthen the bonds of peace among Pacific peoples by promoting a feeling of brotherhood among the scientists of all the Pacific countries.

The constitution of the association provides for administration through a "Pacific Science Council" composed of members appointed by the research councils or similar organizations, located at centers where investigations of Pacific problems are now in progress. The charter membership consists of representative institutions in Australia, Canada, China, France, Great Britain, Hawaii, Japan, the Netherlands, Netherlands East Indies, New Zealand, the Philippines and Russia. Provision is made for the admission to membership of other countries as they develop active interest in Pacific problems.

In its organization, the Pacific Science Association presents some unusual features. It has no permanent officers and no specified place of meeting. The plan is to meet once in three years in response to an invitation extended by a responsible institution in some Pacific country; and to leave to the institution under whose auspices a meeting is held the entire responsibility for organization, financing, program and personnel. Between sessions, the work of the

association is to be carried on by "Standing Committees" appointed for the study of approved projects. Individuals and institutions have complete freedom of action under an implied agreement to follow a common program, to substitute sympathetic cooperation and teamwork for national, institutional and personal aggrandizement, and to freely interchange information regarding plans, work in progress and results of investigations. Another interesting feature of the association is the adoption of English as the official language.

The Pacific Science Association is the outgrowth of the realization that a knowledge of the people and of the resources of the Pacific is a prerequisite to intelligent thinking in regard to future commercial, social and political development. It is also the result of experience gained during the past decade through cooperative undertakings and of the knowledge attained through informal conferences in different countries and the more formal Pacific science congresses held in the United States (1920), in Australia (1923) and in Japan (1926).

The value of these triennial congresses is shown by the authoritative papers published in the Proceedings, by the successful completion of investigations recommended and by the increased recognition of the advantages of genuine international action. At the preliminary meetings held on the United States mainland during 1916–1919, few foreigners were present. For the 1920 conference, fifty-three "overseas" delegates came to Honolulu, thirty-four of them from the United States mainland; the remaining nineteen, from Australia, Canada, Japan, New Zealand and the Philippines. For the 1923 congress, the overseas delegates numbered seventy-nine, representing sixteen countries.

In planning the 1926 session of the Pacific science congress, the National Research Council of Japan set the number of "overseas" delegates and scientific observers at 150—a number which seemed generously large in view of the attendance at previous congresses. A relatively small attendance seemed also to be assured by the method of selection. Invitations were extended only to individuals who were actively interested in Pacific science. And as a means of procuring the presence of the men most desired, the National Research Councils of the different Pacific countries were asked to make the selections on behalf of the Japanese government on the basis of a specified quota. So great, however, was the interest that even after excluding administrative officials and eliminating honorary invitations, most of the quotas were exceeded and the number of appointed delegates who came to Tokyo surpassed the enrolment of any previous scientific gathering held within the Pacific area.

The official "overseas" delegations comprised 124 professional scientists and sixty-one scientific students and observers, and represented seventeen countries. In addition, Portugal and several Latin-American countries were represented by government officials—not scientists. The Japanese members of the congress, exclusive of administrative officials and committees, numbered about 380, thus giving a total membership exceeding 560. The largest group of "overseas" scientists came from the United States mainland —38; followed in turn by China—19; Australia—14; the Philippines—9; Russia—8; Netherlands Indies—8; Hawaii—7.

The remarkably large total membership involved grouping into sections, which also were large, thus assuring the presentation of many different views. The membership of the larger subdivisions was: Geology, including petrography, mineralogy, volcanology, mining and soil science, 80; medicine, including physiology, physiological chemistry and hygiene, 69; agriculture, 59; physics, 32; botany, including forestry, 52; zoology, including entomology, 46; engineering and architecture, relating chiefly to earthquake-proof construction, 27; geography and oceanography, 24; astronomy, 17; chemistry, 16; anthropology, 16; veterinary science, 14; geophysics, 14.

At the Japanese congress, more than 400 papers were presented under an admirably devised scheme of grouping, which allowed for discussion limited only by the time available. As at previous congresses, the chief attention was given to such subjects as food conservation, potential food sources, population, fisheries, the preservation of forest and soil, the geological structure of the Pacific, the history and status of native peoples. Underlying the formal papers, discussions and informal speeches was the feeling that in some way, not as yet fully understood, increase in scientific knowledge of the Pacific is of benefit to the people who now live and those who afterwards will live within and on the borders of the Pacific region.

That this belief is a guiding principle of the people of Japan is shown by their attitude toward the 1926 congress. To a degree heretofore unknown in international scientific gatherings, this congress was a national event, participated in by the imperial family, government officials, educators, business men, financiers, farmers and school children. In the true sense of the word, the overseas visitors were honored guests of the nation. So obvious was the feeling of goodwill that the congress seemed to be a group of friends gathered to discuss science rather than scientists welcomed to a delightful country.

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