land 1,200 feet or more higher than now, for a considerable period of time, may have an important bearing on certain problems of plant geography. Fernald has shown that many species of plants characteristic of the Pine Barrens and Coastal Plain floras of New Jersey and the south occur at various points along the New England and Acadian coasts, and even on Newfoundland; and he believes these species could reach their present position only by spreading along a sandy land bridge such as would be provided if the banks were to project above sea level. Following Daly he appealed to a lowering of sea level during the glacial epoch to lay bare the crests of the banks. Barrell pointed out that this would require the migration of the flora during a cold period, whereas the evidence indicates that such migration must have taken place when the climate was as warm as, or warmer than, that of the present; and he suggested a local bulging up of the Banks zone, marginal to the ice sheet, while the mainland was weighted down by the ice, followed by further uplift as the ice melted and the rising mainland carried the marginal zone up with it for a time. The submarine physiography of the Gulf of Maine indicates that prior to the advent of the ice the land stood so high that there were no such broad channels of open water as must have separated certain of the Banks on the theory of a more limited lowering of sea level due to glaciation; while instead of a temporary land bridge due to bulging at the margin of the glacier we apparently had relatively permanent normal coastal plain conditions continuously from New Jersey to Newfoundland. It seems most probable that the plant migration took place prior to the ice advance, when conditions for such migration apparently were most perfect and most long-enduring; and that remnants of the flora survived that ordeal on favored parts of the coastal plain. If this be true, the botanical problem may in large measure be independent of changes of sea level due to glaciation, and of marginal bulging due to crustal readjustment under the weight of the ice; although it must be recognized that both of these factors may have played an important rôle in the later history of the Banks Cuesta.

Professor Fernald in his later writings has clearly recognized the possibility of a preglacial migration of the Pine Barrens flora to its far northern position; and in response to an enquiry as to whether there is anything in the botanical evidence as known to-day to negative such migration in preglacial time, he replies: "There is absolutely no botanical reason, so far as I can see, why this might not have been the case. In fact, there are certain rather striking points which would indicate that a migration in late Tertiary or early Pleistocene times took place."

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SCIENTIFIC EVENTS

THE COMMISSION OF INTELLECTUAL COOPERATION

THE Report of the Commission of Intellectual Cooperation of the League of Nations, made September 1, 1923, reports the following transaction at their meeting of July 27.

Mr. Lowes Dickinson presented the following resolutions:

1. The task which presents itself immediately to this commission which is of the greatest urgency, is to obtain help for the universities of European countries which are in distress.

2. This help will be distributed impartially among all countries in distress, no matter whether they are members of the League of Nations or not.

3. The commission will endeavor to collect funds by addressing themselves to universities, institutions and societies in America and other countries that have suffered less, and will enter into communication with all organizations that pursue the same ends as, for instance, the Universities Committee of the Imperial War Relief Fund in England.

4. A separate commission will be charged with the organization of this work.

In discussing this proposition Mr. de Reynold desired to extend the help offered to scientific institutions other than universities. He said that in Germany, for instance, the universities rely upon the support of the state, while private institutions (libraries, scientific societies, etc.), whose scientific importance is very great, often need more assistance than universities. He offered the following substitute:

1. The commission approves heartily the creation of national commissions for intellectual cooperation such as have been founded in Central and Eastern Europe, and it congratulates the organizers. It sees in these commissions the best means of organizing intellectual cooperation.

2. The commission decides to extend these organizations not only over countries which have suffered particularly through the war, but also over those countries in which intellectual life is continued under the most favorable conditions.

3. The commission decides also to invite existing national commissions and those which may be formed to designate delegates to meet with the commission in order to study the most proper means of organizing intellectual cooperation.

4. The commission invites the experts in charge of the investigation of the state of intellectual life in those countries in which this life is particularly menaced to continue their investigations in such a way as to give a report on the most urgent needs of the various countries.

In commenting on these resolutions he remarked particularly upon the difficulty of obtaining informa-

tion in the larger countries such as Germany.

Mr. Lorentz added to these resolutions the following:

The Commission of Intellectual Cooperation asks the Council of the League of Nations to ask the governments' members of the League of Nations, to give their moral and financial support to the work of the International Commission.

The resolutions presented by Mr. de Reynold and Mr. Lorentz were accepted.

SYNTHETIC AMMONIA

IN the French Senate on March 4 the agreement with the Badische Anilin und Soda Fabrik for the cession to the French Government of the patents for the manufacture of synthetic ammonia came up for approval.

M. Léon Perrier, reporter of the commission dealing with the matter, said, according to the report in the London *Times*, that the main object was to assure to France products necessary in the development of her agriculture. In 1921–22 the consumption of nitrogen amounted to 70,000 tons, 80 per cent. of which was imported at a cost of 500,000,000 francs. In Germany in that same year there was a consumption of 370,000 tons, all of which was manufactured on German soil. It was the Haber-Bosch process which had enabled Germany to obtain such a large quantity of nitrogen and to avoid rapid and complete defeat in the war. The object of the agreement with the Badische Anilin und Soda Fabrik was to give France the benefit of the Haber-Bosch process by which it was hoped to obtain the 100,000 tons of nitrogen which she required annually. The adoption of the Haber-Bosch process did not exclude the consideration of other processes invented in France, and particularly the Claude process. The Haber-Bosch process would be exploited in the powder factory at Toulouse, and for this purpose credits had already been voted by parliament. The government proposed to retain sufficient control over the manufacture of synthetic ammonia to guarantee the interest of the state.

Replying to criticisms, M. Chéron, minister of agriculture, said that at present France produced 12,000 tons of nitrates annually, and imported, in addition, 58,000 tons for agricultural uses. Germany produced more than 350,000 tons of nitrates, and would shortly be in a position to produce 500,000 tons, and her program even looked forward to an outpot of 800,000 tons. The French government had chosen the Haber process, in which it had a right of property under the Treaty of Versailles. Controversies had arisen as to the relative values of the Haber process and the Claude process, and the question had been examined by a special commission from the point of view of national defence. It was useless to oppose one process against another. There was need of 120,000 tons of nitrate a year for wheat growing alone, and there was no fear of production of nitrates by the various processes beyond what the national markets could absorb.

M. Patart, director of the government powder factories, explained that the government had purchased from the Badische Anilin und Soda Fabrik not the patents but information concerning the methods of applying them. The technical knowledge which that company alone possessed was indispensable for the manufacture of nitrogen. The British and Americans, in the hope of discovering this secret, had spent a great deal of money without obtaining any result. The bill ratifying the agreement was approved.

THE STUDY OF EARTHQUAKES IN THE PHILIPPINES

THE governor general of the Philippine Islands has issued the following executive order:

OFFICE OF THE GOVERNOR GENERAL
Of the Philippine Islands.
Manila, February 6th, 1924.

EXECUTIVE ORDER No. 9:

A board consisting of Dr. José Algus, director of the Weather Bureau, chairman; Miguel Saderra Maso, chief seismic and magnetic division, Weather Bureau; E. H. Pagenhart, director of the Bureau of Coast and Geodetic Survey; M. Kasilag, acting director of Public Works; Victoriano Elicano, acting director of the Bureau of Science and chief of the Division of Mines; and Dr. R. E. Dickerson, geologist; is hereby appointed for the purpose of making a scientific study of the conditions existing in the Philippine Islands, with a view to preparing the country against any possible catastrophe similar to that which recently took place in Japan, and to recommend practicable means of preparedness or precautionary measures, giving particular attention to constructions, water system (including canalization and sewage), natural drainage, gas and electric plants and system, the location of cable lines, and such other features as the board may deem necessary, especially in the regions believed to be most exposed to danger. The board is authorized to call upon any office or individual employees of the government for any information that may be needed in this work.

(Signed) LEONARD WOOD,
Governor General.

GRANTS FOR RESEARCH BY THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE following grants have been made for 1924, on allotments decided upon by the committee on grants for research: