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:

ASTRONOMY

$100 to Dr. Sebastian Albrecht, Dudley Observatory, for the accurate determination of correlations between stellar wave-lengths, spectral types and absolute magnitudes.

$150 to Professor S. D. Townley, Stanford University, Calif., for help in the compilation of a new variable star catalogue.

BOTANY

$250 to Dr. R. S. Breed, New York Agricultural Experiment Station, for a study of red chromogenic rods.

$500 to Dr. George H. Shull, Princeton University, for work to be done in the greenhouses at Princeton University, especially upon Oenothera cultures.

$250 to Professor R. B. Thomson, University of Toronto, for collecting conifers in Australia.

PHYSICS

$190 to Dr. F. C. Blake, Ohio State University, for apparatus to be used in work on X-rays.

$190 to Professor Robert H. Goddard, Clark University, for work on a high-altitude rocket.

$150 to Professor L. R. Ingersoll, University of Wisconsin, for magneto optical studies.

$250 to Professor S. R. Williams, Oberlin College, for studies on the correlation between the changes in length which occur in ferro-magnetic substances when magnetized and the Barkhausen effect, the noise which one hears in the process of magnetization by means of a three stage amplifier.

$180 to Professor Arthur Compton, University of Chicago, for funds to purchase transformers for X-ray work, to be used in the studies of recoil electrons from scattered rays.

PHYSIOLOGY

$75 to Miss Helen C. Coombs, New York University, for research on the emergency function of the cardiac nerves.

$225 to Professor C. W. Green, University of Missouri, for a study of the distribution of the different gases in the blood and tissues during nitrous oxide anesthesia.

$250 to Professor W. F. Hamilton, University of Louisville, for a study of the distribution of the three sensations involved in color vision. To pay for an elaboration of the Rayleigh box built up by the applicant at Yale University.

$300 to Professor James B. Mavor, Union College, for work on the physiological effects of X-rays.

PSYCHOLOGY

$240 to Dr. Donald A. Laird, Yale University, for a study on the influences of varying amounts of sleep upon performance in mental multiplication, together with the concomitant variance in the metabolic increment.

ZOOLOGY

$500 to Mario Bezzi, Turin, Italy, for work on the insect fauna of high altitudes.

$200 to Professor Franz Schrader, Bryn Mawr College, for an investigation looking toward a solution of the cause of sex in the White-Fly (*Trialeurodes vaporariorum*) in England.

BURTON E. LIVINGSTON,
*Secretary, Committee on Grants for Research*

## THE TORONTO MEETING OF THE BRITISH ASSOCIATION

THE annual meeting of the British Association for the Advancement of Science will be held this year in Toronto, August 6 to 13, and the International Mathematical Congress will be held at about the same time, August 11 to 16. Members of the American Association have been cordially invited to be present at the British Association meeting and the permanent secretary of the American Association is arranging to mail a copy of the preliminary program of the Toronto meeting to each member. These will be sent out as early as possible after the receipt of the programs from England. It is hoped that reduced railway rates may be secured. All Americans interested in science should attend if possible.

Members of the American Association have been offered a special privilege in connection with attendance at the Toronto meeting. The regular fee for attendance will be $5, with an additional fee of $2.50 to be paid by those who wish subsequently to receive the published report of the meeting, but members of the A. A. A. S. who pay the $5 fee, whether they attend or not, may receive the report free, if they so request at the time of making payment. Each member of the American Association who is in good standing at the time the preliminary programs are sent out from the Washington office is to receive with the program a certificate of identification, which should be exhibited when the ticket to the Toronto meeting is purchased. Members who pay their 1924 dues to the Washington office subsequently to the sending out of the Toronto preliminary programs may receive certificates of identification for use in connection with the Toronto meeting if they so request when they pay their 1924 dues or after these have been paid. It will greatly facilitate the work of the local committee in charge of preparations for the Toronto meeting if all Americans who plan to attend the Toronto meeting will intimate this intention as soon as possible, but members of the American Association should secure their certificates of identification from the Washington office beforehand and present them when they pay their $5 fee for the Toronto meeting, especially if they wish to request the published report of the meeting. Intimations of intentions to attend may be addressed to the Local Honorable Secretaries, British Association, Room 50, Physics Building, University, Toronto. A blank form for intimations will be supplied with each preliminary program.