SCIENCE NEWS

Science Service, Washington, D. C.

HAVANA CONFERENCE OF COMMITTEES ON INTELLECTUAL COOPERATIONS FROM AMERICAN COUNTRIES

NATIONAL Committees on Intellectual Cooperation from nineteen American countries met recently in Havana.

A tri-lingual hemisphere is envisaged by Dr. Antonio S. de Bustamante, who opened the conference and stated that understanding of one another's languages was the first essential of friendship and unity between our nations. He asserted that Spanish and Portuguese should become "second languages" of the United States, as English is fast becoming the second tongue of Central and South American states. When we can freely converse, we can cast off our suspicions of one another, read the literature of other Americans and develop a family spirit.

Dr. James T. Shotwell, head of the delegation from the United States, stated that the preservation of freedom throughout the world was the ultimate objective of the conference. He said it was impossible for cooperation and unity to be imposed upon peoples; that it must spring from a genuine appreciation of the achievements of one another. "The peace settlement of the present war must include strong measures for cultural cooperation among nations," he concluded.

The development of science and scientific societies among the American republics was brought up in a resolution presented by the delegates from Peru. The proposal is for a series of international literary and scientific competitive contests, with money to be contributed by their respective governments. Prizes of $8,000 and $2,000 would be awarded each year for outstanding literary and scientific works.

In addition, proposals were drafted by the conference calling for wide-spread exchange of students, teachers and scientific leaders among the American republics during the coming years. Selection of these would be on the basis of scholarship merit, character, ability to profit by the experience, and familiarity with the language of the country. Resolutions were offered condemning the treatment of many scholars and scientists in occupied countries of the world, and asking that the governments of the American nations offer every possible facility to exiled scientists and scholars, and give them freedom of movement among the several American states. This conference marks a milestone in inter-American relations, and proposes to set up means of free exchange of various scientific and cultural works, educational films and works of art and music. Changes in copyright laws, to give better protection to writers, were recommended.

The delegates from the United States included the following: Dr. James T. Shotwell, *chairman;* Dr. I. L. Kandel, Virginia Gildersleeve, Mrs. Laura D. Barney, Malcolm Davis, Stephen P. Duggan, Sterling Fisher and Dr. George Zook. Observers for the United States are John Lockwood, Charles Thomson and Dr. J. H. Furbay, director of the Casa Pan-Americano at Mills College, Calif.—J. H. FURBAY.

THE UNITED STATES ANTARCTIC EXPEDITION

THE first reports on scientific results of the U. S. Antarctic Expedition were presented at the opening session of the autumn meeting of the American Philosophical Society, Philadelphia. Those who withstood the siege of the world's worst blizzards on the world's most desolate land have spent the time since their return in digesting the data that they gathered, and are now beginning to publish their findings. Professor F. Alton Wade, of the U. S. Antarctic Service, outlined reports now ready, and those still in preparation, on studies of the aurora, ice formations, geology, ornithology and weather and radio conditions.

How a sledging party climbed the mile-high Antarctic plateau with a ton and a half of equipment pulled by four dog teams, and set up the world's southernmost weather observatory, was told by H. G. Dorsey, Jr., of the U. S. Weather Bureau. Two of his colleagues, Lester Lherke and Robert Palmer, occupied this outpost of science for two months.

"Despite prevailing northeasterly storms of drifting snow," Mr. Dorsey said, "their days were well spent between living quarters in a sturdy tent and meteorological office in a snow cave. For the first time in South Polar regions, detailed high level weather data were obtained in a form suitable for comparison with near-by sea-level observations."

They remained in constant touch with the main party at East Base by radio. Every six hours, simultaneous weather observations were made at both stations. At the same time, automatic instruments were making continuous autographic records of wind, pressure and temperature. Pilot balloon observations of the winds aloft were especially valuable when there was a low overcast below the plateau. The data they obtained proved highly valuable in forecasting flying conditions for the expedition's planes.

Cosmic ray results, obtained by instruments on shore, on shipboard and carried aloft by both airplanes and radiosonde balloons, were reported by Professor Serge A. Korff, of New York University.

New details, added to the map of Antarctica by five field parties working on the ground and two airplanes operating from West Base, were reported by Paul A. Siple, geographer of the U. S. Antarctic Service. Four newly discovered areas of internal disturbance were studied, and 15 bays and inlets were photographed in the continuous aerial survey of about 400 miles of barrier ice, from an altitude of 7,000 feet. Inland, gaps in previously existing maps of Antarctic mountain chains were filled, and absence of sea-level connections between the Ross and Wedell seas was confirmed.—FRANK THONE.

A NEW VACCINE AGAINST INFLUENZA

A NEW, powerful vaccine against influenza and pictures showing for the first time what the influenza virus

looks like were presented by Dr. Leslie Chambers and Dr. Werner Henle, of the Johnson Foundation of the University of Pennsylvania, at Philadelphia, before the society.

The first human trials of the vaccine, on several hundred volunteers, are scheduled to start next week. It is so powerful that a single shot quite regularly protects mice against 100,000 killing doses of influenza virus.

The virus of influenza itself, now seen for the first time with the aid of the electron microscope, was revealed as an unimaginably tiny spherical particle with a diameter of 11 millimicrons. This is so small that, placed side by side, enough of these particles to give influenza to about 500 mice could be covered by the period at the end of this sentence. This is based on the calculation that the minimal infectious dose is less than 100 particles. The influenza A virus particle is one of the smallest disease-causing substances yet isolated. It had previously been believed to be about nine times this size. The larger particles which had been found in lungs of mice infected with influenza A are now believed to be components of normal cells which acted as carriers of the much smaller influenza virus particles.

True influenza virus particles were isolated from extra-embryonic fluids of developing hens' eggs that had been infected with influenza. Chemical analysis showed the virus to be composed largely, if not entirely, of the kind of protein found in the nucleus of cells.

The virus was concentrated from the extra-embryonic fluids by spinning it for 90 minutes in an ultra-centrifuge with a force 90,000 times that of gravity, and by the addition of protamine, familiar to diabetics from slow-action protamine insulin. The new vaccine, besides being remarkably effective in mice, has the advantage of being free from foreign proteins which might produce unfortunate reactions. It will be some time before its protective value is known. Tested on mice, it showed greater efficiency than the vaccine developed at the Rockefeller Institute which, in trials during last winter's epidemic, cut down influenza among vaccinated persons to 50 per cent. of that among unvaccinated persons in the same institutions.

LIMESTONE FORMATIONS IN THE LUNGS AND TUBERCULOSIS

A COMMON but not yet recognized disease has been shown by investigators of the U. S. Public Health Service to be the cause of tiny limestone formations in the lungs previously thought due to tuberculosis. Because physicians have taken these tiny spots shown up on x-ray plates to be due to tuberculosis lesions that have been cured, the new findings will probably cause a change in medical diagnosis of many cases. Curiously, the new disease is highest in areas where there are extensive limestone and chert formations, that is, in areas adjacent to the Appalachian Plateau.

These observations aroused the Public Health Service to make an independent study. It selected Ross County, Ohio, an area adjacent to the Plateau, where lung calcification is common, but tuberculosis fatalities not above ordinary. Rural families were selected in order to rule out as far as possible contacts with tuberculosis outside the household. More than 200 persons in 44 farm households were x-rayed and tuberculin tested. Of 253 persons effectively x-rayed, 125 showed the limestone formation in the lungs—but none had significant tuberculous lesions. Of 235 who were tuberculin tested, 194 were negative. Fifty-six persons with negative tuberculin tests showed lung calcification. The studies were made by Dr. B. J. Olson, passed assistant surgeon; Dr. W. H. Wright, chief of the division of zoology, and M. O. Nolan, associate zoologist, all of the Public Health Service.

The existence of an unrecognized disease of very common occurrence is suggested by these investigators. It appears to produce the lung lesions closely resembling the x-ray picture of primary tuberculosis. They believe therefore, that the finding of lung calcification particularly in tuberculin-negative persons should not be assumed to be evidence of tuberculosis infection.

With tuberculosis apparently ruled out, the ascaris as a possible cause of the lung calcifications was next considered. Ascaris is a tiny, parasitic worm, which in the larval stage may damage the human lung. Careful study, however, failed to prove or disprove that ascaris was guilty. The studies are being continued.

MENTAL BREAKDOWNS

STRICT physical and mental examination before induction will enable the United States to avoid mental and nervous breakdowns among its armed forces, according to Dr. Robert Dick Gillespie, psychiatric specialist of the Royal Air Force of Great Britain, who gave the first of the Salmon Lectures at the New York Academy of Medicine.

Dr. Gillespie said that there are remarkably few cases of psychoneuroses because of the extreme care used in selecting members of the Royal Air Force. Only the mentally and emotionally stable get past the weeding-out process. Every one who flies for the RAF and most of the ground force has the "professional attitude" toward his work, whether he is a pilot or an air gunner, a mechanic or a rigger. His patriotic devotion is reinforced by his pride in his particular technique and his devotion to his job.

Dr. Gillespie credited the "greater importance which is attached to the individual" in this war as one reason why there are fewer neurotics than in the last war. Even among the infantry a man tends "to be more and more a technician, and less of a foot flogger." He told of a hospital specially built for the care of psychoneurotic victims in the RAF that had to be closed after a few months and directed to other work because there were not enough patients to fill it.

Surprisingly enough, Dr. Gillespie continued, the war has given birth to two institutions, shelter life and community centers, which are highly successful as a preventive of psychoneuroses. "We have learned that shelter life with its common sharing of danger has helped people to withstand peril better than isolation in small groups,

which often contributes to the development of psychoneuroses. The feeling of being with others during an air raid, even in an insecure shelter, brings courage. Shelter life and community centers fill a need for companionship. In large cities, before the war, we had the paradox of want amid plenty, social want in the midst of social possibilities. Now persons return from safe areas to the shelters in large cities declaring, 'I'd rather be bombed than bored.'

"Activity of some sort is a necessary condition of happiness," he said, "and for many people a necessary preventive of psychoneurotic or anti-social behavior. It is important for psychiatrists to recognize the apathy or restlessness which may precede psychoneurosis."

HAY-FEVER

NEW evidence that a chemical released by the blood cells may be partially responsible for some of the strange symptoms of hay-fever and other allergies, is reported in the *Journal* of the American Medical Association. Histamine is a chemical which stimulates the automatic nervous system over which we have no voluntary control. When histamine is injected into the skin, it produces the familiar "wheal" suffered by some allergy patients. It has long been suspected that this chemical may in part be responsible for many of the clinical symptoms of allergy. Experiments with animals supported this suspicion, and encouraged Drs. Gerhard Katz and Stanley Cohen, of Tulane University, to test blood taken from allergy patients and non-allergic persons.

When extracts of ragweed, house-dust or timothy were incubated with blood of non-allergic persons, no histamine production was noted. When, however, the blood of a person sensitive to one of the irritants was similarly tested, the histamine level rose considerably. Further, the reaction was specific. That is, if the patient were allergic to ragweed, but not timothy, his blood produced histamine only in the presence of the ragweed extract, not timothy. The authors conclude: "We may assume that at least at points of high concentrations of allergens (irritants), such as the tissues of the respiratory or digestive tracts, the histamine released from blood cells circulating through these areas should, to a certain extent, contribute to some of the local tissue reactions."

"FREEZING" WASTE GASES FROM THE STEEL AND PETROLEUM INDUSTRIES

HIGH octane gasoline and synthetic rubber can be produced from waste gases of the steel and petroleum industries by applicaton of a low temperature technic secretly developed in Russia, was reported by Professor Cecil T. Lane, of Yale University, in an address before the Society of Sigma Xi.

These gases are mixtures of valuable industrial gases. Each has a different liquefaction and freezing point, so that by lowering the temperature far below the freezing point of water, the different gases may one by one be frozen out and separated into pure components. Then they can be put together again in the various ways and proportions necessary to produce gasoline, rubber and other vital defense materials, for which they provide an almost inexhaustible source of raw materials.

The surprisingly strong resistance of the Russians to the German invasion, Dr. Lane attributed in large part to their development of the low temperature industry, in which they were far ahead of Germany. In this country the industry is only in its infancy, but Dr. Lane foresaw that it would open up many new avenues in synthetic manufacturing.

Dr. Lane demonstrated the Peter L. Kapitza machine for producing liquid helium at a temperature 455 degrees Fahrenheit below zero. It is the only machine of its kind in the Western Hemisphere and there are only five other places in the world where liquid helium can be produced. The machine was built from a sketch sent from England before the outbreak of the present war.

ITEMS

UNDER the direction of Dr. William J. Kerr, professor of medicine, a group of ten physicians will study the common cold and other respiratory infections of bacteria and viruses (ultra-microscopic disease agents), and the head, throat and chest maladies caused by allergies. The body's defenses against colds, including the efficiency of the human nose as an air-conditioner, will be analyzed. Some believe that a nose subjected to violent changes from warm to cold air sometimes fails to rally from such shocks sufficiently to carry on its air-conditioning service, and that a cold results. The relation between overcooling, atmospheric conditions and sudden temperature changes to cold-catching will be studied in a specially built room, large enough to accommodate six people, in which temperature and humidity can be changed rapidly to any desired condition.

UTILIZING a technique never before employed in metallurgy, a new process for the manufacture of aluminum from clay instead of the mineral bauxite, of which only about three years' supply remains in this country at the present rate of defense consumption, was announced to the American Institute of Chemical Engineers, by Professor Arthur W. Hixson, of the department of chemical engineering of Columbia University. The new process is expected to make this country independent of imports of foreign bauxite. It was developed at Columbia under the direction of Professor Hixson, assisted by Ralph Miller and Ivan J. Klein. All processes for the production of aluminum use only high-grade bauxite ores. About 3,143,000 long tons will be required annually for the defense program alone. The reserve in the United States at the present time is about 11,000,000 long tons, according to geological estimates. Half of this has been imported. Without a method of using some other ore than bauxite, the United States would soon have to import all its aluminum ore. The new process uses selected high-silica clays, digests the clay with hydrochloric acid and decomposes the resulting product to get aluminum oxide. From this, the metallic aluminum is extracted by electrolysis in the usual manner. The hydrochloric acid is recovered for further use. The materials and chemicals used are abundantly available because they are by-products of other processes.