Society published in November 1948. Schlittler and Andreia Uffer, a research associate, had filed an application in the Patent Office that was entitled to an effective filing date of 21 May 1948.

It was conceded by the Patent Office that the article was not a proper reference on the basis of its publication date alone. However, at the end of the published article was the notation "Received April 30, 1948." The Patent Office's position, in line with previous decisions of the board of appeals, was that this notation at the end of the article constituted prima facie evidence that the invention was "known" by others prior to 21 May 1948, under a provision of the Patent Statutes.

The court, after reviewing numerous decisions, construing and interpreting the word *known,* concluded that the "placing of the article in the hands of the publisher did not constitute either prima facia or conclusive evidence of knowledge or use by others in this country of the invention disclosed in the article, within the meaning of the [statute]."

Toxicity of Ozone

Biologists at Armour Research Foundation of Illinois Institute of Technology will attempt to study the toxicity of ozone. The foundation is conducting the investigation for the U.S. Air Force School of Aviation Medicine, Randolph Air Force Base, Texas.

Six investigators, headed by Hans-Georg Clamann, physiologist at the school of Aviation Medicine, will expose themselves to controlled concentrations of ozone in A.R.F.'s ozone chamber. Because of its toxicity, only laboratory animals have been exposed to ozone until recently.

Clamann and his five associates from Randolph Air Force Base will expose themselves to from 1 to 10 parts of ozone to 1 million parts of air in an 8-day series of experiments. Previous experiments on laboratory animals showed that exposure to as low as 12 parts ozone to 1 million parts of air proved fatal to some animals within 3 hours. However, the dose required to kill 50 percent of the common laboratory animals is in the range of 20 to 35 parts ozone to 1 million parts of air.

Premedical and Medical Education

The possibility of combining premedical and medical education will be studied at Northwestern University under a 3-year $75,000 grant from the John and Mary Markle Foundation, and under a portion of a recent $300,000 grant from the Commonwealth Fund. The committee conducting the study is composed of faculty members drawn from the medical school, the college of liberal arts, and the graduate school.

In the proposed plan, a student would enter the combined premedical and medical course on graduation from high school. The course would last 7 or 8 years and would present a unified progression of study in the arts and in the physical, biological, and medical sciences. There would be no sharp break between premedical and medical education; education in all fields would continue throughout the program.

First steps to be taken by the committee will be to examine ideas and methods of premedical and medical teaching now used, and the implications of recent advances in medicine in treating diseases. They will also study the facilities and personnel that the program would require, and they will collect and analyze opinions, ideas, and suggestions of students, doctors, and faculty members throughout the country.

Two of the problems to be solved in setting up a program will be in designing the courses so that a student could logically branch out into other fields allied to medicine if he desired to drop his training to be a physician, and to design the program so that graduates from other liberal arts colleges may enter the medical program at Northwestern.

AEC Foreign Agreements

The United States has negotiated agreements with France, Switzerland, and Australia for cooperation in the peaceful uses of atomic energy. All agreements take account of the arrangements that may be considered if an international atomic energy agency is created, and all specify safeguards and controls necessary for the safe use of fissionable material.

The agreement with France permits the exchange of unclassified information on the development, design, construction, operation, and use of various types of research, experimental power, and power reactors. Further data will also be transmitted on health and safety problems and on the use of isotopes in industry, agriculture, medicine, and biological research. Subject to agreement by the two countries, specialized research facilities and reactor materials-testing facilities within France and the United States will be made available for mutual use. Provision is also made for collaboration between private organizations of the two countries.

The United States has undertaken to provide France, subject to the conditions of the agreement, 40 kilograms of contained uranium-235 in uranium enriched up to a maximum of 20-percent uranium-235. Further, the U.S. Atomic Energy Commission may sell a portion of this material enriched up to 90 percent with uranium-235, for use in a materials-testing reactor. Finally, the French Atomic Energy Commissariat may obtain gram quantities of plutonium and uranium-233 for experimental projects.

The agreement with Switzerland provides that the United States may sell to the Swiss Government uranium containing up to 500 kilograms of uranium-235. Most of this fuel will be enriched up to 20 percent with the uranium-235 for use in research, experimental, and power reactors. However, Switzerland may also obtain 6 kilograms in a 90-percent enrichment for fueling a materials-testing reactor.

The agreement also permits the transfer of equipment and devices, as may be agreed, for use in the civilian atomic energy program of Switzerland and the transfer for research purposes of gram quantities of plutonium, uranium-233 and uranium-235. Authority is provided for purchase of other reactor materials. The new agreement is separate from the research agreement for cooperation, covering exchange of unclassified data on peaceful applications of atomic energy which has been in effect since 18 July 1955.

The agreement with Australia provides for the sale of up to 500 kilograms of uranium enriched up to 20 percent in uranium-235, for use in research, power demonstration, and power reactors. Up to 6 kilograms of this amount enriched in uranium-235 up to 90 percent may be sold to Australia for use in a materials-testing reactor. The agreement also provides for the transfer of equipment and devices, as may be agreed, and for the exchange of visits to research facilities.

Australia is an important producer of uranium ores from its Radium Hill and Rum Jungle areas. The United States buys part of this ore through the Combined Development Agency. The agreement provides that existing ore agreements and contracts will continue in effect and that the two governments will exchange information on exploration for and treatment and production of ores.

High-Altitude Studies of Solar Flares

Studies of the effects of solar storms or flares on radio fadeouts are being undertaken for the International Geophysical Year by the U.S. Naval Research Laboratory. Balloon-supported rockets were released from the *USS Colonial* (LSD-18), some 200 to 400 miles west of San Diego, Calif., during the last 2 weeks in July.

Ten 12-foot long rockets of the "Dea-

con" research type are being carried aloft by 68-foot diameter, "Skyhook" balloons to a height of approximately 80,000 feet. Each rocket carries an instrument load of 20 pounds and floats above the ocean until a solar "flare" is observed.

Inasmuch as solar "storms" rise to a maximum in a matter of minutes, NRL scientists using conventional rocket techniques have been delayed by the time taken, first, in detecting the flare from the ground, and then, in launching the rocket and gaining the altitude necessary for scientific observations. The ship-controlled balloon-rocket technique will reduce the delays. It is expected that a minimum time-lag of 90 to 120 seconds between the decision to fire and the attainment of the required observational altitude can be achieved by using this approach.

The decision to fire is based on the occurrence of a detectable solar flare. Detection can be achieved in two ways. One notice of a "flare" is the sudden radio "fadeouts" of the medium- and short-wave radio receivers aboard the ship. A second method makes use of an optical telescope coupled to a closed-circuit television system, with a red-colored filter corresponding to the light of a hydrogen flare. The picture of the sun as viewed on the TV screen shows the flare as a vivid flash.

When the decision has been made to fire a rocket, signals from a shipboard transmitter activate electronic instruments in the nose of the rocket, and also energize the receiver that controls the rocket igniter. As the rocket takes power, its pull shatters the plastic balloon, and in the next 90 to 120 seconds it attains an altitude of 60 to 70 miles in the ionosphere. In its trajectory it telemeters to the observing station aboard the *Colonial* data on the strength of x-ray and ultraviolet radiations from the "flare."

In addition to the telemetering transmitter, the "Deacons" contain photon counters sensitive to radiation from the sun in three wavelengths; 1216 angstroms, 1 to 10 angstroms, and 0.05 to 1 angstrom. These wavelengths correspond to the Lymanalpha line of hydrogen, x-rays, and "soft" gamma rays, respectively, which are believed to have independent but accumulative effects on the ionosphere, and hence on radio "fadeouts."

News Briefs

■ A suit that enables a man to work for several minutes at a temperature of 1200°F has recently been developed by the Minnesota Mining and Manufacturing Company, St. Paul, Minn. The suit is made of fiber glass coated with aluminum. The aluminum coating reflects much of the heat and permits the insulating layer of fiber glass to be much

less bulky than would otherwise be necessary to provide equivalent protection. Aluminum coats have also been bonded to cotton cloth and to asbestos for other specialized uses. The accompanying picture shows a demonstrator holding a wooden box inside a furnace. The box has burst into flame, but the demonstrator is unharmed.

Use of the suits is expected to save time and expense in the repair of equipment used in high-temperature installations.

■ Development of an iron lung that will automatically adjust itself to a patient's needs will be undertaken at Vanderbilt University under the supervision of Randolph Batson, associate professor of pediatrics.

The object of the development is to produce an iron lung that a patient can control through the muscle impulses he would normally use for breathing. Thus the patient himself will control both the rate and depth of breathing. Present respirator aids all tend to force the patient into a pattern of breathing that may not be precisely what he needs at all times. The key to the proposed device is the use of electrodes from which electric connections will lead from the patient to a controlling device for the iron lung. Thus, as the patient makes a normal attempt to breathe, an impulse resulting from the attempt will trigger the iron lung and the air will be forced into his lungs.

■ The Veterans Administration plans an enlarged medical research program under the record $10 million appropriated by Congress for the fiscal year that began 1 July. Most research will be concentrated in four areas of major diseases: mental, nervous, and brain diseases; heart and artery diseases; cancer and leukemia; and problems of aging.

The VA will expand its research program in tuberculosis, in the fungus diseases that resemble tuberculosis, and in the infectious diseases. It will support individual projects in such subjects as high blood pressure, hardening of the arteries, the metabolic diseases, and epilepsy and related nervous disorders.

In addition, the VA plans to enlarge its studies of drugs for the treatment of specific diseases, such as tuberculosis, multiple sclerosis, psychiatric disorders, high blood pressure, and cancer. The VA also will investigate changes in lung function due to aging and disease, and the effects of brain surgery in the treatment of schizophrenia. It will conduct two follow-up studies in order to make an evaluation of the natural course of coronary artery disease and coronary thrombosis and an evaluation of the long-term results of chemotherapy on tuberculosis. It also has a program in atomic medicine.

In all of these studies, the VA will be advised by the National Research Council Committee on Veterans Problems, the Statistical Agency of the National Research Council, and the Advisory Committee in Research of the VA, which is composed of outstanding leaders in American medicine.

Scientists in the News

ROBERT GRAHAM, dean of the University of Illinois College of Veterinary Medicine, will retire 1 Sept. A member of the faculty of the university since 1917, he was made dean of the College of Veterinary Medicine in 1945. Graham was the first scientist to detect botulism in animals, and the first to develop an antitoxin for botulinus, a form of food poisoning in human beings. In 1948 he was the first veterinarian to be appointed as scientific consultant to the Federal Pure Food and Drug Administration. Graham will be succeeded as dean by CARL A. BRANDLY, now chairman of the department of veterinary science at the University of Wisconsin.

The following are among those who have recently received honorary doctoral degrees.

University of Wisconsin: BENJAMIN M. DUGGAR, former professor at the University of Wisconsin and consulting scientist for the American Cyanamid Company.

University of Bonn: WEIKKO A. HEISKANEN, director of Ohio State University's Institute of Geodesy, Photogrammetry, and Cartography.

Carleton College: LLOYD H. REYERSON, chemistry professor, University of Minnesota.

Stevens Institute of Technology: DONALD A. QUARLES, Secretary of the Air Force; WILLIS H. TAYLOR,