in three doses, a total of 0.54 g of 87 per cent. and 0.26 g of 71 per cent. heavy water, containing altogether 0.66 g of pure $H^2{}_2O$. This would be equivalent, weight for weight, to a consumption of 4 or 5 liters of heavy water by an adult human being. The mouse survived and on the following day and thereafter seemed perfectly normal. Nevertheless, during the experiment he showed marked signs of intoxication. While the control mice spent their time eating and sleeping, he did neither, but became very active, running and leaping about and spending much of the time, for some mysterious reason, in licking the glass walls of his cage. The more he drank of the heavy water the thirstier he became, and would probably have drunk much more if our supply of heavy water had not given out. The symptoms of distress that he showed seemed more pronounced after each dose but not cumulative with succeeding doses, which leads me to suspect that the heavy water was being rapidly eliminated by the mouse. This could have been ascertained if suitable preparation had been made.

When we consider all these experiments we may conclude that heavy water is never toxic to any high degree and that it is tolerated in high concentrations by lower organisms. In such cases the rate of the vital processes seems to be roughly proportional to the fraction of the total hydrogen which is H^1. When all the H^1 is replaced by H^2, growth is certainly extremely slow and is probably entirely inhibited. When we seek an explanation of these phenomena there is no question but that it is to be found in the greatly reduced rate of all physico-chemical processes when H^2 is substituted for H^1. This is seen in the lower mobility of the heavy hydrogen ion,[5] in its much lower rate of deposition at a cathode, in the diminished rate of mutarotation of sugars[6] containing heavy hydrogen, and in the fermentation experiments to which reference has been made. Professor Rollefson in this laboratory is studying a photo-chemical reaction in which $H^1{}_2$ reacts thirteen times as fast as $H^2{}_2$. Now it seems likely that in the complicated chain of processes which are necessary to growth, there are some whose rate is so enormously decreased by the substitution of H^2 for H^1 that they are practically inhibited. The inhibition of a few essential processes would inhibit all the processes which must run concurrently, or in sequence. Thus in a system containing no ordinary hydrogen vital growth would be suspended, while in one containing both H^1 and H^2 the process of growth would be approximately proportional to the fraction of the total hydrogen which is H^1.

One of the first experiments that should be tried is to grow some organism for a considerable period of time in a mixture of the two kinds of water, and then by analysis of the dried tissues to find whether the two isotopes are used in the proportion in which they exist in the water, or whether there are mechanisms which permit the preferential employment of H^1, or even in some cases of H^2. It is not inconceivable that heavy hydrogen, which exists in small amounts in all natural water, may actually be essential to some plants or animals. A supply of water almost completely freed from the heavy isotope is now being prepared for the purpose of conducting such studies.

SCIENTIFIC EVENTS

THE EMERGENCY COMMITTEE IN AID OF DISPLACED GERMAN SCHOLARS

THE Emergency Committee in Aid of Displaced German Scholars has submitted its annual report. It is pointed out that the procedure followed by the committee has been simple. Due to the response of so many universities, colleges and institutes, and due also to the limited funds at its disposal, it was found necessary to make grants in preferential order to a selected list of institutions extending from the Atlantic to the Pacific oceans. At first, grants were made for a single scholar in each institution. Later, in isolated cases, a second grant was made. Funds have been made available directly to the administrative heads of institutions.

The Emergency Committee records with satisfaction the monetary assistance received from foundations, especially the New York Foundation and the Nathan Hofheimer Foundation; from the American Jewish Joint Distribution Committee and from private sources. In its decisions the Emergency Committee has had the support of the Rockefeller Foundation, which, in accordance with its general policy, has reserved freedom of action in regard to each application from the universities. Actually the Rockefeller Foundation has contributed equally with the Emergency Committee in almost all the grants made.

As of January 1, 1934, grants have been made for placing thirty-six scholars. Their names, disciplines, previous institutions and present posts are given below.

M. Palyi, economics, Handelshochschule, Berlin, University of Chicago.

O. Szasz, mathematics, Frankfurt, Massachusetts Institute of Technology.

[5] Lewis and Doody, *Jour. Am. Chem. Soc.*, 55: 3504, 1933.

[6] Pacsu, *Jour. Am. Chem. Soc.*, 55: 5056, 1933.

J. Franck, physics, Göttingen, Massachusetts Institute of Technology, the Johns Hopkins University.
K. Loewenstein, law, Munich, Yale University.
F. Bernstein, mathematics, Göttingen, Columbia University.
P. Tillich, theology, Frankfurt, Union Theological Seminary and Columbia University.
K. Lewin, psychology, Berlin, Cornell University.
O. Nathan, economics, Hochschule für Politik, Berlin, Princeton University.
K. Landauer, economics, Handelshochschule, Berlin, University of California.
H. Lewy, mathematics, Göttingen, Brown University.
E. Berl, chemistry, Technische Hochschule, Darmstadt, Carnegie Institute of Technology.
M. Sommerfeld, literature, Frankfurt, New York University.
H. Neisser, economics, Kiel, University of Pennsylvania.
E. Noether, mathematics, Göttingen, Bryn Mawr College.
Felix Bloch, physics, Leipzig, Stanford University.
R. Brauer, mathematics, Königsberg, University of Kentucky.
Moritz Geiger, philosophy, Göttingen, Vassar College.
Artur Nussbaum, law, Berlin, Columbia University.
K. Pribram, economics, Frankfurt, Brookings Institution.
Walter Beck, criminologist, Leipzig, Boston University.
H. Werner, psychology, Hamburg, University of Michigan.
Max Sulzbacher, biochemistry, Tierärztliche Hochschule, Berlin, Connecticut State College.

Definite selections have not yet been made by the Hebrew University, Palestine; the University of Wisconsin; the University of Minnesota; the University of Missouri; Duke University; the University of North Carolina; Rutgers University; Purdue University; the Catholic University of America; Mills College; the Ohio State University, and the University of Pennsylvania.

CHEMICAL ABSTRACTS

PROFESSOR E. J. CRANE, of the Ohio State University, has issued a statement describing the work of *Chemical Abstracts,* edited by him under the auspices of the American Chemical Society.

The volume for 1933 contains 64,190 abstracts, representing new information of chemical interest appearing in scientific journals throughout the world as well as reviews of the chemical patents granted in the various nations. This is a gain of 6,109 over 1932. Professor Crane points out that an increasingly large number of patents are chemical, not mechanical. Those issued in the principal countries of the world during 1933 aggregated 28,051, a record figure.

Chemical Abstracts was founded more than twenty-five years ago to keep American science and industry informed of chemical progress in other lands. The annual index number is so large that it has to be issued in three separate sections, each comprising about 800 pages. The 2,000 scientific journals which are systematically examined for articles of chemical interest by more than 200 abstractors yielded material for 36,139 abstracts in 1933 as against 37,403 in 1932. This substantial increase in total number of abstracts has been due to patent activity.

Most of these patents relate to chemical processes, as electroplating, metallurgy, fermentation, gas manufacture, petroleum refining, the making of acids, salts, dyes, paper, cement, pharmaceutical chemicals, explosives, pigments, sugar, etc., or to so-called compositions of matter as the many plastic and other artificial materials which the chemist has provided in recent years in such useful form that they are replacing natural materials long in use.

That investigative or at least publication activity has shown little effect of the depression is evident from the following figures:

Year	Abstracts of articles	Abstracts of patents	Total number of abstracts
1929	29,082	17,867	46,949
1930	32,731	21,246	53,977
1931	32,278	18,904	51,182
1932	37,403	20,678	58,081
1933	36,139	28,051	64,190

It is pointed out that these figures do not mean that chemical industry has escaped the depression, but they suggest that there has been continued active building for the future of chemistry.

THE AMERICAN ACADEMY OF TROPICAL MEDICINE

AT a Conference on Tropical Medicine held on February 5 and 6, under the auspices of the National Research Council in Washington, the new Academy of Tropical Medicine was formed and incorporated under the laws of the District of Columbia. Delegates to the conference included: Dr. George C. Shattuck and Dr. Richard P. Strong, Harvard Medical School; Dr. Francis W. O'Connor and Dr. James W. Jobling, College of Physicians and Surgeons, Columbia University; Dr. Charles F. Craig, Tulane School of Medicine; Dr. Henry E. Meleney, School of Medicine, Vanderbilt University; Dr. Robert Hegner and Dr. W. W. Cort, School of Hygiene and Public Health, the Johns Hopkins University; Dr. Edward B. Vedder and Dean Earl B. McKinley, School of Medicine, George Washington University; Dr. William H. Taliaferro, University of Chicago; Dr. Alfred C. Reed, Pacific Institute of Tropical Medicine, University of California; Dr.