examine it in this way, sometimes before it was dry. If he saw the lines considerably displaced from their normal positions, he knew that it was extremely unlikely that this was because of the star's large space velocity, since, as we have said, he had found that such velocities are always small for B-type stars; the displacements must then be due to orbital motion, and so indeed they invariably proved to be when later he could examine a series of plates of that star.

Frost's place in astronomy is not to be judged on the basis of his researches alone. We have already mentioned his translation of Scheiner's work and the part this translation played. For more than thirty years his was the chief responsibility for editing the *Astrophysical Journal*, "an international review of spectroscopy and astronomical physics," founded in 1895 by Hale and Keeler, and now in its eighty-first semiannual volume. One might say of Frost as Frost used to say of Burnham, "he is the best skeptic I know." As a result of this quality of judicious conservatism, the *Astrophysical Journal* has had little to regret in the way of hasty or ill-advised publication. In addition, he had an unusually sensitive feeling for language, which showed itself not only in his English but quite as well in German and nearly as well in French.

The last years of his life form a sad story, but an inspiring one as well. From early childhood he had had trouble with his eyes. This became acute by 1907 and necessitated long periods of complete rest for his eyes. In 1915 the retina in one eye became detached and within a few months he completely lost the sight in this eye, never to regain it. A few years later a cataract began to form in his other eye and grew worse and worse until he became totally blind. In spite of this heavy handicap, he managed for several years to continue his work as director of the observatory, but finally felt compelled to retire in 1933.

In the first year of his retirement he dictated to his wife, and dedicated to her, his autobiography, under the title "An Astronomer's Life."[1] The volume is important as a contribution to the history of present-day science. His story is told with fascinating charm, and I for one found it impossible to put it down before I had finished it. It is much more than a setting down of facts or a collection of well-told stories. As a record of courage and good sportsmanship in the face of one of life's severest disasters it can not fail to move every reader. In all his years of complete darkness he never lost his sense of humor. To the last he had a way of ignoring his blindness in conversation and whimsically using terms and expressions that one should ordinarily expect only from those who can see.

Early in April of this year Frost went to a Chicago hospital for observation. The cause of his ailment was diagnosed as gallstones. After some hesitation on account of his age (he was in his sixty-ninth year), an operation was performed on May 6. His condition improved for a few days but then his strength rapidly waned until the end came on May 12.

Among the honors that came to him were honorary degrees from Dartmouth and Cambridge; membership in the National Academy of Sciences, the American Philosophical Society and the American Academy of Arts and Sciences; honorary membership or the equivalent in the Royal Astronomical Society (London), Societa degli Spettroscopisti Italiani, astronomical societies in Mexico, Canada and Russia.

Dr. Frost was married in 1896 to Mary Hazard, of Boston; she and their three children survive him, as does his elder brother, who, like their father before them, is a professor in the Dartmouth Medical School.

FRANK SCHLESINGER
YALE UNIVERSITY OBSERVATORY
JUNE 4, 1935

[1] Houghton Mifflin Company, Boston and New York.

REGINALD OLIVER HERZOG

R. O. HERZOG was born in Vienna in 1878. His father was a newspaperman. After finishing his secondary education, Herzog studied chemistry at the University of Vienna under Lieben and there took his doctor's degree with a paper on organic chemistry. His interest, however, was at that time in physiological chemistry and so he went first to Heidelberg, where he worked in the Physiological Laboratory under Kossel, then to Utrecht and to Kiel. His first papers of this interval (1902–1905), nine in number, were concerned with straight physiological chemistry. But soon his interest branched out. He started to work on fermentation and the action of fungi. That led him deeper into industrial questions and he published papers on the theory of tanning and disinfection. On the other hand, he began to apply the methods of physical chemistry to ferment reactions, studying their kinetics and the influence of temperature upon them. In the meantime, he had moved to the Technische Hochschule at Karlsruhe, where he became first privatdozent, then ausserordentlicher (associate) professor. At that time, Haber was professor of physical chemistry there, working on the synthesis of ammonia. With him, Herzog formed a friendship that lasted until Haber's death in 1933.

In Karlsruhe, Herzog continued along his previous lines (physiological chemistry in general, fermentation), but he started also on two new subjects that were to occupy him through the rest of his life. He attempted to get a better insight into the constitution of the natural substances, many of which are colloidal, by physico-chemical methods. With this in mind, he instigated a number of experimental and theoretical

investigations on diffusion. Making use of recent formulas of Einstein, he showed how it was possible to use the diffusion coefficient to determine the size of large molecules. Secondly, he got interested in the connection between chemical structure and physical properties. He translated the text-book of Smiles with that title from the original English; this became the standard work on the subject in German. After a short stay in Berlin, he was called in 1912 as full professor of mycology to the Technische Hochschule in Prague. But at the outbreak of the war his friend Haber, who in the meantime had become director of the Kaiser Wilhelm Institut for Physical Chemistry in Berlin, had him transferred there, where he worked on the improvement of the cloth and rubber material for gas masks. After the war he returned shortly to Prague, but in 1921 he was made director of the newly founded Kaiser Wilhelm Institut of Textile Chemistry. Here, as direct neighbor of Haber, he found himself in an ideal position. He was rid of the teaching he disliked. He was at the head of a laboratory, which he could organize, and at the same time he could work with industry, consulting and advising. His laboratory devoted half its work to technical questions, but half of it was devoted to purely scientific problems. Herzog succeeded in picking out young men who were destined to make their place in chemistry. Ewald, now professor in Stuttgart; Polanyi, now professor in Manchester; Mark, now professor in Vienna; Schmid, now in Freiburg in Switzerland; Smekal, now in Halle; Bergmann in Dresden, now in New York, and Weissenberg worked there. The problems selected bore on the fundamentals of textile structure as the clue to its properties. And so Herzog started the new tool, x-ray investigation of structures, on natural organic matter. The concept of fiber structure (Polanyi) was born here, and investigations on the structure of textile-fibers, wood and chitin were made.

A large group of investigations centered around the strength of fibers and gave rise to a group of papers on gliding and stretching of metals, which have contributed greatly to our understanding of the strength of metals. Of course, purely chemical problems were not neglected.

In recent years, the depression forced the curtailment of the purely scientific work, as the institute was mainly supported by industry. A large part of Herzog's time began to be occupied with the search for money to keep the institute up. But he did not neglect his own work and turned again his attention to the fundamental question of the structure of glasses and liquids, to the nature of viscosity and the like. He was also editor of an Encyclopedia on the technology of textile materials. His list of publications contains 52 articles for 1901–1914, 91 articles from 1921 on.

In the fall of 1933 he was retired from his position and accepted a professorship at the reorganized University of Istanbul (Constantinople, Turkey). At the beginning he felt the change very strongly, but seemed after some time to get better accommodated to it. In the beginning of 1935 Mrs. Herzog, who was suffering from a chronic knee ailment, and he went to Zurich in Switzerland for medical treatment. His own health was bad. Since the war he had been suffering deeply under the general conditions of the world. His idealism and scientific attitude felt deeply hurt by the hate and unreason rampant everywhere. In a fit of depression he took his life on February 4.

K. F. HERZFELD
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MEMORIAL TO CHARLES DARWIN

PERMISSION to erect a memorial to Charles Darwin in the Galapagos Islands to commemorate his visit there 100 years ago, according to *The Christian Science Monitor,* has been granted to the Darwin Memorial Expedition by President Velasco Ibarra of Ecuador. The memorial, it was indicated, will be in the form of a scientific research station, the establishment of which "would make available to present-day natural scientists from all over the world an opportunity to study at first-hand Galapagos flora and fauna, whose primitive state is to-day as completely remote from the encroachments of civilization as it was upon Darwin's epochal sojourn there a century ago."

In addition to the scientific research station, a monolith will be erected on Chatham Island, one of the most important of the group. This monolith will bear commemorative bas-reliefs on each of its four faces and will be topped by a replica of the bronze bust of Darwin now in the hall of biology of the American Museum of Natural History. Dedication of the memorial has been fixed for September 6.

Arrangements for the memorial were made with the Government of Ecuador by Dr. B. W. von Hagen, leader of the expedition, who is now in Ecuador carrying on ethnological, geographical and biological surveys of the coast and hinterland.

RECENT DEATHS

EDWARD SALISBURY DANA, tutor and professor of physics at Yale University from 1874 until his retirement as professor emeritus in 1918, curator of mineralogy from 1875 to 1920, died on June 16, in his eighty-sixth year.

DR. LEÓN M. GUERRERO died on April 13. The Executive Board of the National Research Council of the Philippine Islands have passed resolutions in his memory which refer to his work in the following