trained able engineers for service wherever ores are mined and metals are recovered; for enhancing the prestige of metal mining in the financial and industrial world."

The William Lawrence Gold Medal "for distinguished achievement in mining" was presented to George B. Harrington, president of the Chicago, Wilmington and Franklin Coal Company of Chicago.

The Anthony L. Lucas Medal "for distinguished achievement in improving the technique and practice of finding and producing petroleum," was presented to Charles Ormer Millikan, chief engineer of the Amerada Petroleum Corporation, Tulsa, Okla., "for his outstanding contributions to engineering in the development and production of petroleum."

Selwyn Gwillym Blaylock, president and managing director of the Tadanac plant of the Consolidated Mining and Smelting Company of Canada, Ltd., at Trail, B. C., received a certificate of honorary membership in the institute "in recognition of his eminent standing as a metallurgist, engineer and administrator of mining and metallurgical enterprises and the effective and patriotic services he has rendered his country and the United Nations in these critical times."

The Robert W. Hunt Gold Medal and money prize given for "the best original paper on iron and steel contributed to the institute" was presented to Clarence D. King, metallurgist of the United States Steel Corporation of Pittsburgh.

The J. E. Johnson, Jr., award of a cash prize and certificate, given to metallurgists not over forty years of age for contributions to the metallurgy or manufacture of pig iron, was presented to Leonard A. Tofft, general foreman of the new blast furnaces of the Inland Steel Company at Indiana Harbor, Ind.

THE RICHARD PEARSON STRONG MEDAL

THE American Foundation for Tropical Medicine, Inc., announces the establishment of an award for outstanding achievement in the field of tropical medicine to be awarded periodically as circumstances determine. This award is to be known as the Richard Pearson Strong Medal for distinguished achievement in tropical medicine. It consists of a paladium medal together with a cash honorarium of $500, the gift to the foundation of the Winthrop Chemical Company. The first award was presented to Colonel Strong at the annual meeting of the American Foundation for Tropical Medicine at the University Club, New York, on February 28. Admiral E. R. Stitt, M. C. (retired), former Surgeon General of the United States Navy, made the presentation. The citation reads:

The medal and award for distinguished achievement in tropical medicine has been established to honor outstanding contributors to this important field of the medical sciences. It is fitting that it should bear the profile and the name of a distinguished American physician who has devoted his career to this branch of medicine and whose name is known throughout the world. It is peculiarly appropriate that the first award should be made to him.

A scientist, who since his appointment in 1899 as president of the first Board for the Investigation of Tropical Diseases in the Philippine Islands, and subsequently as director of the Philippine Government Biological Laboratory in Manila, has made fundamental contributions to scientific knowledge of many tropical diseases, including bacillary and amebic dysentery, cholera, bubonic and pneumonic plague, beri-beri, yaws, tropical ulcer and tropical skin diseases, trypanosomiasis, typhus fever, filariasis, onchocerciasis—the blinding filarial disease of Africa and Central America—and Oroya fever.

Author of many important scientific articles and monographs dealing with tropical diseases and of the revised edition of the most distinguished American text on tropical medicine.

Leader of scientific expeditions to remote areas of the tropics of Africa and of the Amazon Valley, to Central America and the valleys of the Andes.

Samaritan, physician and leader of relief expeditions to the peoples of Manchuria stricken by a devastating epidemic of pneumonic plague, and later to Serbia which was in the throes of the great epidemic of typhus fever in 1915.

Teacher and professor of tropical medicine at the University of the Philippines from 1907 to 1913; professor of tropical medicine at Harvard University from 1913 to 1938; and organizer of the first graduate School of Tropical Medicine of the Western Hemisphere.

Past president of the American Society of Tropical Medicine, the American Academy of Tropical Medicine, the American Society of Parasitologists and the Association of American Physicians.

Eminent figure in military medicine; member of the Inter-Allied Sanitary Commission in the first World War; consultant in tropical medicine to the Secretary of War; director of the Course in Tropical Medicine at the Army Medical School; and member of the Medical Corps of the United States Army in four wars; recipient of the Distinguished Service Medal in 1919 for exceptionally meritorious and distinguished services, notably as president of the board for the Investigation of Trench Fever—Colonel Richard Pearson Strong.

SCIENTIFIC NOTES AND NEWS

FOUR honorary members, one each from the four principal Allied Nations, have been elected by the British Institute of Metals. They are, for the United States, Dr. Irving Langmuir, associate director of the research laboratories of the General Electric Company; for Great Britain, Sir Lawrence Bragg, Cavendish professor of experimental physics at the University of Cambridge; for China, Madame Chiang

Kai-Shek, and for the U.S.S.R., Professor Peter Kapitza, director of the Institute for Physical Problems of the Academy of Sciences, Moscow.

THE Lamme Medal for 1943 of the American Institute of Electrical Engineers has been awarded to Arthur H. Kehoe, vice-president of the Consolidated Edison Company of New York, Inc., in recognition of "pioneer work in the development of alternating current works and associated apparatus for power distribution." It is expected that the medal and certificate will be presented to him at the summer technical meeting of the institute, which will be held at St. Louis from June 26 to 30.

DR. V. E. SHELFORD, professor of zoology at the University of Illinois, has been made corresponding member of La Sociedad Mexicana de Historia Natural.

THE Council of the British Institution of Electrical Engineers has elected Sir Ernest Thomas Fisk, since 1932 managing director and chairman of Amalgamated Wireless, Australia, an honorary member of the institution in appreciation of his services in Australasia in the field of radio-communications.

THE honorary doctorate of science was conferred on February 25 at the commencement of the Worcester Polytechnic Institute on Dr. Wallace W. Atwood, president of Clark University.

CLARKSON COLLEGE OF TECHNOLOGY, Potsdam, N. Y., conferred the degree of doctor of engineering on Thorndike Saville, dean of the College of Engineering of New York University, at the forty-fifth commencement exercises on February 13.

THE American Academy of Orthopedic Surgeons has awarded its gold medal to Colonel John L. Gallagher, M.C., A.U.S., in recognition of his work on the development of compression dressings for burns, wounds and frostbite.

DR. GEORGE BAEHR, professor of clinical medicine at Columbia University, who since 1941 has been medical director of the U. S. Public Health Service and chief medical officer of the U. S. Office of Civilian Defense, will retire from government service on March 1. He will be succeeded by Dr. W. Palmer Dearing, who has been assistant chief medical officer. In recognition of his services to the hospitals of the country in time of war, the American Hospital Association at its recent annual meeting voted a special citation to Dr. Baehr and elected him to honorary membership.

IGOR SIKORSKY, inventor of the helicopter adopted by the Army Air Forces, was presented on February 13 by Fawcett Publications, Inc., with the 1943 aviation Trophy and the sum of $1,000.

DR. NIELS BOHR, professor of theoretical physics at the University of Copenhagen, has been elected a member of the Athenæum Club, London, under a rule which permits the "annual election by the committee of a certain number of persons of distinguished eminence in science, literature or the arts or for their public services."

EARL RUSSELL (Bertrand Russell), who has lived in the United States for some years, has been elected a fellow of Trinity College, Cambridge. He expects to return to England during the summer to resume his work in philosophy and mathematics.

THE second meeting of the Oregon Academy of Science was held in Portland on January 15. An organization meeting without a program was held on October 27 last. Officers elected were: *President-elect,* Stanley Jewett, regional biologist, the U. S. Fish and Wildlife Service, Portland; *President,* the Reverend Jos. S. McGrath, professor of chemistry and dean of the College of Science of the University of Portland; *Treasurer,* R. R. Huestis, professor of zoology at the University of Oregon, re-elected. Dr. A. L. Strand, president of Oregon State College, previously head of the department of entomology, will remain on the council as past president for this year. The present secretary is F. A. Gilfillan, dean of the School of Science of the State College, who continues for the second year of his term of office.

THE following officers were elected on February 4 at the annual meeting of the Branner Geological Club of Southern California at the California Institute of Technology: E. Robert Atwill, of the Union Oil Company, *President;* Beno Gutenberg, of the California Institute of Technology, *Vice-president,* and Clifton Johnson, of the Richfield Oil Company, *Secretary-Treasurer.* The principal address was given by Hoyt S. Gale and Rodney Gale on the geology of the Kramer borax deposits in southern California; Earl C. Noble showed colored motion pictures of Costa Rica and Guatemala.

DR. WALTER RAUTENSTRAUCH, of Columbia University, has been appointed visiting professor of engineering during the spring term at the North Carolina State College, Raleigh.

DR. LOUIS J. CURTMAN, professor of chemistry at the College of the City of New York, who has been connected with the college since 1907, has retired from active service.

R. M. FOSTER, of the Bell Telephone Laboratories, has been appointed professor of mathematics and head of the department at the Polytechnic Institute of Brooklyn.

DR. CORNELIUS OSGOOD, associate professor and chairman of the department at Yale University, curator of the Peabody Museum, has been promoted to a professorship of anthropology.

WILL C. MCKERN, curator of anthropology at the Milwaukee Public Museum, has been appointed director of the museum, succeeding the late Dr. Ira Edwards.

CHRISTOPHER W. COATES, a member of the staff of the New York Aquarium, has been appointed curator of fishes at the New York Zoological Park. Myron Gordon, also of the aquarium, has been made assistant curator.

DR. W. S. FLORY, JR., from 1936 to 1944 main station horticulturist at the Texas Agricultural Experiment Station, has received appointment as horticulturist with the Virginia Agricultural Experiment Station at Blacksburg.

DR. R. E. MORTIMER WHEELER, director of the Society of Antiquaries and keeper of the London Museum, has been appointed director-general of archeology in India.

DR. HOBART A. REIMANN, professor of medicine at Jefferson Medical College, visited Puerto Rico in December as guest of the Puerto Rican Medical Association in San Juan, where he gave several lectures on acute infectious diseases.

DR. REGINALD FITZ, lecturer on the history of medicine at the Harvard Medical School, delivered on February 24 an address entitled "Medicine and the Changing World" at the New York Academy of Medicine. The meeting was presided over by Dr. John F. Fulton, Sterling professor of physiology at the School of Medicine of Yale University.

DR. C. H. BACHMAN, physicist of the electronics laboratory of the General Electric Company, gave a lecture on February 25 under the auspices of the chapter of Sigma Pi Sigma of New York University. He spoke on the new electron microscope developed by him and Dr. Simon Ramo.

DR. H. J. MULLER, professor of biology at Amherst College, delivered on February 9 a lecture before the division of biological sciences of the University of Rochester. His subject was "Our Mutations."

DR. JUSTIN L. POWERS, chairman of the Committee of National Formulary and director of the laboratory of the American Pharmaceutical Association, addressed the Science Club of the University of Georgia on February 24 on "Official Drug Standards."

DR. JOHN W. OLIPHANT, surgeon, Division of Infectious Diseases, National Institute of Health, will deliver the sixth Harvey Society Lecture of the current series at the New York Academy of Medicine on March 16. He will speak on "Jaundice Following Administration of Human Serum."

THE Federation of American Societies for Experimental Biology, by vote of the executive committee, will not hold an annual meeting in 1944. Through the medium of the *Federation Proceedings,* however, provision will be made for the publication of abstracts of papers which would have been presented if it were feasible to hold such a meeting. Similarly, provision will be made for the full publication of papers contributed to several symposia. This arrangement corresponds to that which was made in 1943 when the annual meeting was also cancelled. It is now announced that a meeting will be held in Cleveland on May 8, 9 and 10, 1945, unless some unforeseen difficulty arises. The federation is composed of the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics, the American Society for Experimental Pathology, the American Institute of Nutrition and the American Association of Immunologists.

APPLICATIONS for grants from the Cyrus M. Warren Fund of the American Academy of Arts and Sciences should be received by the chairman of the committee, Professor Frederick G. Keyes, Massachusetts Institute of Technology, Cambridge 39, Mass., not later than April 15. Grants are made in aid of chemical research, generally for apparatus or supplies, or for the construction of special facilities needed for research in chemistry or in fields closely related to chemistry. Grants are not awarded for salaries, and on account of limited resources the amount to an individual is seldom in excess of $300. Application blanks may be obtained from the chairman upon request.

THE following chemicals are wanted by the National Registry of Rare Chemicals, Armour Research Foundation, 33rd, Dearborn and Federal Streets, Chicago, Ill.: 1,2,3,4-Tetrahydroxy benzene (Apionol), l-Amino-2,3-hydroxy propane, 3-Amino-2-naphthol, l-Amino-9-octadecene, Barium platinic chloride (1 lb.), Benzyloxy Carbonyl Chloride (carbobenzoxy chloride), p-Chlorophenyl acetic acid, Comenic acid, or any ester thereof, Chelidonic acid or any ester thereof (Monoester, preferably), 1,7-Dihydroxy-6-naphthoic-3-sulfonic acid, Dibenzyl disulfide, Di-n-hexylamine (10 lbs.), Hexaphenyl ethane, Indazole (50 g), o-Iodosobenzoic acid, 2 Mercapto-1,3,4 thiadiazole and Stachydrine.

A SYMPOSIUM, sponsored by the division of industrial and engineering chemistry, on the post-war outlook for the chemical industry, will be held in connection with the one hundred and seventh meeting of the American Chemical Society which meets in Cleveland from April 3 to 7 under the presidency of Dr. Thomas

Midgley, Jr. Subjects to be discussed include financial problems of the transition period, the outlook for foreign trade in chemicals, the need for more intensive research, the prospect for new engineering developments, the enhanced importance of technical progress to management and trends in professional education. Dr. Lawrence W. Bass, director of the New England Industrial Research Foundation, will be chairman of the symposium. Ralph E. Flanders, president of Jones and Lamson Machine Company, Springfield, Vt., chairman of the Research Committee of the Committee for Economic Development, will deliver an address on "Technology and Industrial Management." Other speakers will be D. M. Sheehan, comptroller of the Monsanto Chemical Company, St. Louis; Dr. W. L. Badger, of Ann Arbor, manager of the consulting engineering division of the Dow Chemical Company; John B. Glenn, president of the Pan American Trust Company, New York, vice-president of the New York Board of Trade; Raymond Stevens, vice-president of Arthur D. Little, Inc., Boston, and Dr. H. S. Rogers, president of the Polytechnic Institute of Brooklyn.

THE late Lady Thomazine Mary Lockyer, widow of the astronomer Sir Norman Lockyer, bequeathed her residence and other house property to the Norman Lockyer Observatory Corporation, and the residue of her estate in trust for the benefit of the corporation. She left £100 to the British Association for the Advancement of Science.

The Times, London, reports that a grant of £28,600 has been made under the Colonial Development and Welfare Act to enable a tuberculosis survey to be made in Fiji, to determine the extent of the problem and the best means of dealing with it. It is hoped to extend the survey to the British Solomon Islands Protectorate and the Gilbert and Ellice Islands Colony.

Nature reports that the shipbuilding industry in Great Britain, after consultation with the Department of Scientific and Industrial Research and the Admiralty, has decided to establish a British Shipbuilding Research Association, to develop all branches of research associated with shipbuilding, marine engineering and ship repairing.

DISCUSSION

FLOCCULAR MASSES AND APPARENT ALTERATIONS IN SUNSPOT PENUMBRAE

IT is well known that high level, cloud-like masses of ionized Ca and other atoms are related in some way to ordinary sun spots. They are observed to be unusually active in the immediate neighborhood of spots and to partake of the vortical movement of the solar atmosphere about such spots. Unlike the spots, however, individual flocculi can not be observed by direct vision. Observation of the various kinds of flocculi are by spectroheliograms, generally obtained in the K line of Ca for that element, in the Hα line for H, and so on.

Some time ago it occurred to the writer that under certain conditions floccular masses composed of various atoms and having a general absorption and emission might be seen by direct vision, or at least might be demonstrated by the masking effect such masses would have in passing over the dark parts of a sun spot.

That flocculi of various kinds, both Ca and H, for instance, overlie spot groups is, of course, common knowledge. However, the writer proposes that certain apparent changes in the penumbrae of sun spots may often be illusionary, due to the movements of superimposed floccular masses, having general emission and absorption, which are thus rendered directly visible. Both Ca and other atoms may be supposed to share in the phenomenon.

It was shown by Hale that sun spots have magnetic fields centered on the umbrae, which fields appear to derive from the rotation of charged particles. Sun spots, therefore, are vortices. However the vortex itself may be formed, the genesis of a spot appears to be as follows:

An ascending convection current, rising above the photosphere, reaches levels of reduced pressure where the top of the column expands. Heat is lost by expansion and the temperature of the expanded gas falls several thousand degrees relative to the photosphere. Its visible radiation decreasing proportionately, the cloud thus formed is seen as a relatively dark spot against the brilliant photospheric background. This constitutes the umbra of a sun spot. Surrounding it is a periphery of more diffused gases forming the penumbra. This penumbra is commonly and evenly striated and in most cases appears to slope inward and downward towards the umbra. Striation of the penumbra appears to be caused by currents flowing inward and outward to and from the umbra. Essentially, therefore, a sun spot is a funnel-shaped cloud roughly similar to a terrestrial tornado.

Bearing in mind the above facts certain striking metamorphoses are occasionally observed in the penumbrae of sun spots, difficult to explain on the assumption that such changes are real.

A spot is sometimes observed to lose its penumbra entirely on one side, retaining it on the opposite; and the lost portion is frequently regained. Other spots