13. $x = \Delta p^*\{k + (a \cdot 273/T')[(Ph^*/\Delta p + h^*)/P_0]\}$.
14. A. Goldstein, *Science* **110**, 400 (1949).
15. ———, *Proc. Am. Acad. Arts Sci.* **77**, 237 (1949).
16. W. Arnold, E. W. Burdette, and J. B. Davidson, *Science* **114**, 364 (1951).
17. High shaking rates are often essential when using the standard rectangular Warburg manometric apparatus undergoing horizontal reciprocating motion, and it is often desirable or necessary to make readings without stopping the shaking. We have found (*18*) that by suitably mounting an ordinary hand lens, such as a standard equiconvex magnifying glass, on the carriage that supports and moves the manometers, any given manometer appears to the eye or camera to be *stationary* even though it may be shaking at a rate of 250 cy/min or more where unaided visual observations are unfeasible. This phenomenon is the result of an optical effect that reduces apparent motion to zero when the lens is mounted at approximately its principal focal length away from the manometer and moving with it in unison and in parallel, so as to produce collimated light. Whereas in principle any lens of ample size can be used, one with a focal length of 8 to 12 in. and a diameter of 3 to 4 in. has been found satisfactory (Fig. 6). The diameter of the lens should, of course, be as large as the shaking amplitude of the manometer, otherwise the image will disappear during part of the cycle. A lens with ample diameter will also increase the field of view, so that the manometers may be read when there are large changes in the displacements of the fluid indices observed, or where two adjacent manometers are to be observed simultaneously. For photography it is preferable that the lens employed be of a type corrected as in a telescope or binocular objective.
18. G. Hobby, V. Riley, and D. Burk, *An Optical Device for Reading a Rapidly Shaking Manometer or Other Reciprocating Apparatus*, in preparation.
19. The Braun-Fritzsching manometer has on each arm a reservoir of about 20 mm inside diameter and a capillary of about 1 mm inside diameter. This arrangement cannot provide notable sensitivity magnification in free manometry (see text) but only in constant-volume manometry, in which case the inner-arm reservoir is superfluous.
20. At least without making use of special wetting agents and of manometric fluids of exceptionally low viscosity and surface tension (*21*).
21. B. Kok, G. W. Veltkamp, and W. P. Gelderman, *Biochim. et Biophys. Acta* **11**, 10 (1953), Fig. 5.
22. Regarded in another way, since the sum of the hydrostatic pressure of the column and the pressure of the confined gas must always equal the prevailing atmospheric pressure (P_A), and since a positive increase in x causes a positive increase in hydrostatic pressure, it follows (by difference) that the pressure of the confined gas must decrease with positive values of x, and the change in pressure must be negative. Such *a priori* considerations can readily be confirmed experimentally by means of a conventional manometer connected in tandem with the one-arm manometer via vented plugs in the vessels of the two manometers. If gas is added to the one-arm manometer through its stopcock, the already described lengthening of its fluid column will be accompanied by a registered decrease of pressure in the conventional manometer operated either at free or fixed volume in the conventional manner without use of hydraulic magnification devices; that is, the column in the outer arm will fall. If, however, enough gas is added to the one-arm manometer to force all the liquid out of its reservoir down into the capillary below, then, from this point on, the column in the open arm of the conventional manometer will reverse its direction and rise, indicating now the customary increase in pressure with an increase of x in the system when the hydraulic factor A^*/a^* is no longer operating in the one-arm manometer.
23. Demonstrated at the meeting of the Society of General Physiologists, Woods Hole, Mass., 9 Sept. 1954.

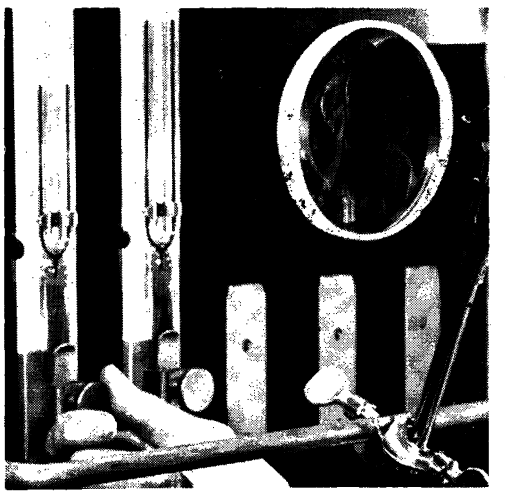

Fig. 6. Illustrative, simple arrangement for obtaining a stationary optical effect (zero apparent motion) with an equiconvex lens mounted at its focal distance and shaking in parallel and unison with a rapidly reciprocating manometer (*17*, *18*).

News and Notes

International Instrument Congress

The wide scope and large size of the 1st International Instrument Congress and Exposition, held under the auspices of the Instrument Society of America in Philadelphia, 13–24 Sept., afforded more than 23,000 persons a unique opportunity to view at first hand the intensive activity that characterizes the present-day field of instrumentation, to observe trends and to evaluate the impact of these trends on individual areas of interest. Although this was actually the ninth in an annual series of instrument conferences and exhibits of the Instrument Society of America (the 1st Instrument Conference and Exhibit was held in Pittsburgh in 1946), it was the first in which foreign countries were especially invited to participate. More than 70 foreign firms were represented in the exhibit; the number of foreign visitors is not yet known but was certainly well into the hundreds.

Official recognition and encouragement of this international participation was provided by two resolutions passed in the U.S. Congress and approved by the President. One resolution permitted articles imported from foreign countries for the purposes of this exhibition to be admitted without payment of tariff, and the other authorized the President of the United States to invite the states of the Union and foreign countries to participate in the congress and exposition. In accordance with this resolution, President Eisenhower issued a proclamation and then went further to signify his endorsement of the congress and exposition by sending a letter to the president of the Instrument

Society of America asking that Presidential greetings be conveyed to those attending.

Nearly 500 exhibitors displayed instruments for every field of application, every industry, every field of research. The cooperation of professional societies in arranging the technical sessions well illustrated the role of instrumentation as a common denominator linking the various traditional scientific and technical fields. Eleven societies assisted in arranging a program of 50 technical sessions in which approximately 160 papers were presented. A listing of these cooperating societies illustrates the interest that all technical fields have in instrumentation: American Institute of Chemical Engineers; American Institute of Physics; American Institute of Electrical Engineers; American Society of Photogrammetry; American Meteorological Society; American Microscopical Society; Institute of Radio Engineers; Society for Experimental Stress Analysis; Metropolitan Microchemical Society of New York; American Chemical Society; American Society of Mechanical Engineers.

Two Clinics were held in conjunction with the congress. One, consisting of eight 2-hr sessions, was the 5th ISA Instrument Maintenance Clinic, which offered instruction to several hundred instrument men and apprentices on maintenance of various basic types of instruments. The other, the 3rd annual Analytical Instrument Clinic, was a lecture and demonstration course on the latest analytic instruments. This was attended by more than 300 engineers, physicists, and chemists. Three-hour sessions were held on each of seven instruments: x-ray quantometer, Littrow-Echell spectrograph, process monitor mass spectrometer, infrared spectrometer, infrared analyzer, ion-resonance spectrometer, and nuclear magnetic resonance spectrometer.

Many of the technical papers presented will appear in forthcoming issues of the *Journal of the Instrument Society of America* or in the journals of the other societies. Preprints were available for most, and the ISA papers will be available in the form of *Proceedings*. A list of titles may be obtained from the ISA (1319 Allegheny Ave., Pittsburgh 33).

Some notable features and trends of the exhibit, in addition to the foreign displays, were the American Institute of Physics exhibition, which included not only the regular publications of AIP but also many books in various scientific fields having instrumentation interest; the large number of exhibits featuring automatic data-reading equipment with digital output; the trend toward using such advanced techniques as modular assembly, miniaturization, and etched circuits; and the continued trend toward rapid commercialization of highly specialized research instruments typified by the nuclear magnetic resonance (n-m-r) spectrometer.

The aisles of the exhibit hall were posted with the names of famous scientists and engineers who contributed significantly to instrumentation. A listing of these names recalls how much their enduring fame has rested on such contributions: d'Arsonval, Boys, Bunsen, Celsius, Coulomb, Elster, Fahrenheit, Franklin, Galileo, Geiger, Gilbert, Helmholtz, Huygens, Lord Kelvin, Rumford, Schweigger, Seebeck, J. J. Thomson, Torricelli, Venturi, da Vinci, Watt, Wheatstone.

At its annual meeting, the council of the ISA elected the following officers, who take office 1 Jan. 1955: pres., Warren Brand (Conoflow Corp., Philadelphia); v. presidents, A. A. Anderson (Swissomatic Products, Los Angeles) and W. H. Fortney (Humble Oil Co. Bay Town, Tex.); treas. J. T. Vollbrecht (Energy Control Co., N.Y.). Continuing members of the executive board include v. presidents, D. C. Little (Army Medical Research Center, Fort Knox) and A. H. Peterson (Mellon Institute, Pittsburgh); sec., R. T. Sheen (Milton Roy Co., Philadelphia); and retiring president W. A. Wildhack (National Bureau of Standards, Washington). The 10th Instrument Conference and Exhibit will be held in Los Angeles, 12–16 Sept. 1955.

Science News

H. Rowan Gaither, Jr., president of the Ford Foundation stated recently in the foundation's annual report that

> Today, timidity characterizes too much of our current corporate and individual giving. . . . There is an unfortunate tendency for donors to select the safe and sure—safe in the sense that few will criticize the gift; sure in that the result of the gift may be predicted.
>
> This tendency, if it persists, will create a philanthropic imbalance by withholding support from areas which must be developed if we are to advance on a broad front. For progress requires the breaking of new and uncertain ground, and often it is surrounded by debate and controversy.

"We Accuse" is the title of a long article on the Oppenheimer case in the October issue of *Harper's* by Joseph and Stewart Alsop. The authors "accuse the Atomic Energy Commission in particular, and the American government in general, of a shocking miscarriage of justice. . . ." After presenting some biographical material, the authors review the six examples of "falsehood, evasion, and misrepresentation" with which the AEC finding was supported, and find only one to be "worthy of serious consideration"—the Chevalier incident, the most important aspect of which, "Oppenheimer's voluntary decision to give the warning about Eltenton," was not mentioned in the AEC opinion. The authors consider this omission to be "no mere caricature of the truth [about the Chevalier incident], but a gross and flagrant distortion . . . the judge himself indulging, wholesale, in the suppression of what is relevant and true, and the suggestion of what is irrelevant and false."

The authors also discuss at length the roles of Roscoe C. Wilson, David T. Griggs, and Edward Teller, as well as three of Oppenheimer's opinions on major issues of national policy: his moral, technical, and strategic objections to the hydrogen bomb; his favor-

able opinion on the tactical use of atomic weapons (Project Vista); and the recommendations of the Project Lincoln Summer Study Group on continental air defense. The authors describe specifically the unpopularity of Oppenheimer's opinions on the latter two questions with the Strategic Air Command.

On 29 Sept. it was reported that **radioactive dust** "presumably borne by winds from the explosion of a Russian nuclear weapon" had been detected by monitoring instruments at the Armour Research Foundation of the Illinois Institute of Technology, Chicago. The city's "radiation content" increased to approximately 700 counts/min, however this count is much less than that given off by a luminous dial wrist watch.

On the same day Japan's Atomic Injuries Investigation Committee issued a nation-wide warning against drinking unfiltered rain water or water from lakes and catchments because of strong radioactivity found recently in rain water in many parts of Japan. The radioactivity has been attributed to Russian hydrogen bomb tests in Siberia.

Jack Hemphill, a biologist for the Arizona Game and Fish Commission, has perfected a method for **preventing fish from being winter-killed** in ice-bound lakes. A channel is opened in frozen bodies of water by pumping compressed air through a perforated pipe anchored to the bottom. The compressed air forces the warmer water at the bottom to the surface and opens a channel. Thus light can reach green plants, which produce oxygen needed by the fish. Normally, light cannot penetrate the ice and thousands of fish succumb to asphyxiation.

Belgium and Switzerland signed an **atomic exchange agreement** shortly after President Eisenhower's recent announcement that the United States would help Belgium build an atomic reactor. Under the agreement Belgium will sell Switzerland small supplies of Congo uranium ore, the vital raw material Belgium formerly furnished only to Britain and the United States under a secret wartime treaty. The two nations also contracted to trade scientific information on construction, exploitation, and operation of atomic piles and reactors.

In 1955 Federal agencies will obligate an estimated **$1.99 billion for research** and development activities, about 10 percent less than the $2.23 billion for 1954, according to the report, *Federal Funds for Science, III. The Federal Research and Development Budget, Fiscal Years 1953, 1954, and 1955,* issued recently by the National Science Foundation.

The major decreases occurred in allotments for research and development plants and facilities—$158 million in 1955 compared with $227 million in 1954, and applied research and development, $1669 million in 1955 and $1703 million in 1954. Obligations for basic research in the sciences were expected to increase during the year from $120 million in 1954 to $131 million in 1955. These figures exclude approximately $176 million (1954) and $35 million (1955) of research and development funds available to the Office of the Secretary of Defense that were not allocated to specific programs at the time of writing.

About 87 ct of each dollar for scientific research and development went to the physical sciences; 11 ct went to the life sciences; and 2 ct to the social sciences. Research and development for national security accounted for about 85 percent of the Federal science expenditures, and the remaining 15 percent was divided among all other functions of government, including agriculture, health, welfare, transportation, communications, and development of natural resources.

British archeologists are resigned to the probability that the site of the Roman **temple of Mithras** recently unearthed in London will soon become the foundation of a new seven-story office building. Preservation of the 1500-yr-old temple is too costly.

In the 10 Oct. issue of *Nature* R. E. Pattle of the British Department of Scientific and Industrial Research's Chemical Research Laboratory reports an **"untapped source of power."** The osmotic pressure of sea water is about 20 atm. The British experiment put the osmotic pressure to work by separating alternate layers of salt and fresh water by alternate basic and acidic membranes that incorporate ion-exchange resins. When such membranes separate salt solutions of different strengths, a potential difference appears. The membranes are connected in series. A hydroelectric pile of 47 pairs of membranes each 3 in. square yielded a maximum of 15 mw output power. At low temperatures the internal resistance is higher and the power output is lower. The pile is therefore likely to be more successful in a warm climate. Whether the process will be economical probably depends upon the time it will run before the membranes need replacing and the interior needs cleaning.

A **ring holding a radioactive chemical** is worn by women factory workers who must put their hands dangerously close to a cutting tool on a machine. When the hand comes to the danger line, the detection instrument clicks. The worker does not have to listen for the signal to pull her hand back, for the click of the instrument stops the machine. A description of this device, was included in a recent speech by Brig. Gen. Elbert DeCoursey, director of the Armed Forces Institute of Pathology.

In a recent issue of the *Journal of the American Chemical Society* Bert L. Vallee of the Biophysics Research Laboratory, Harvard Medical School and Peter Bent Brigham Hospital, and Hans Neurath, professor and head of the department of biochemistry at the University of Washington in Seattle, report that **zinc is an essential component** of an enzyme needed in digestion. Analyses of several independent crystalline preparations of carboxypeptidase, an enzyme obtained from the pancreas of cows, showed that there is exactly one atom of zinc in each molecule. Carboxy-

peptidase acts on the linkages of protein decomposition products and reduces them to amino acids, which are essential in human nutrition.

Identification of the zinc in the enzyme was made as a result of the Harvard laboratory's continuing investigation of the role of metals in cell metabolism and of Neurath's very extensive research on the function and structure of proteins. The coordination of the independent efforts of both laboratories resulted in the successful collaboration.

The U.S. Department of Agriculture's Forest Products Laboratory at Madison, Wis., has developed a new test for detecting **southern pine decay.** When a solution of alizarin red S is applied to the ends of southern pine stock, decay-infected areas turn yellow; healthy wood turns a bright red.

In an article entitled **"Spreading the Fruits of Research"** in the September *American Mercury,* John L. Kent, science and industry correspondent of Washington, D.C., discusses the dissemination of research information by the government bureaus. He says that "red tape, excessive security, and lack of a system are slowing the flow of reports to those who could make use of them." He cites instances in which reports of important nonmilitary research were not made available to industry and other researchers until 3 yr after the reports were written.

The author suggests that an industry-government committee, similar to the one that studied the Atomic Energy Commission dissemination problems several years ago, be organized to "examine the unclassified and perhaps over-classified research reports of the Departments, and look into the nonmilitary departments as well. . . . The mere existence of such a committee would probably speed up dissemination. . . ." Kent thinks that the National Advisory Committee for Aeronautics, the National Bureau of Standards, and the Atomic Energy Commission are doing a good job of disseminating technical information.

In September **Australia's first crushing of uranium** ore began in Rum Jungle in the Northern Territory, an area once considered almost worthless. In 1948 the Commonwealth Government offered rewards up to £25,000 for significant discoveries of uranium. Joe White of Darwin, for 20 yr a gold and copper prospector, recognized in a Government pamphlet a photograph of ore that reminded him of specimens he had seen at an old copper working in Rum Jungle. He sent samples of this ore to the Mines Department at Alice Springs and received the award.

The mountainous **Palmer Peninsula** in the Falkland Islands region of Antarctica is to be mapped and investigated by eight scientists and surveyors who recently left England on a 2-yr expedition. The expedition is officially classified as a routine replacement of personnel already in the area. The Falkland Islands are a British Crown Colony. In 1908 Britain annexed in addition South Georgia, the South Sandwich Islands, South Orkney Islands, South Shetland Islands, and the Palmer Peninsula together with its offshore islands, as the Falkland Island Dependencies. Argentina disputes the British claim to the Falklands, and both Argentina and Chile dispute the claim to the dependencies. Great Britain is establishing a chain of meteorological and other stations in the area.

The main base camp of the current expedition will be established at Hope Bay in Graham Land on the northern tip of the peninsula. Sledge parties will explore the interior next spring. Many lines of research, including ionospheric surveys, will be carried out.

Palmer Peninsula itself is thought to be a geologic continuation of the Pacific Coast volcano chain extending from the Rockies to Tierra del Fuego. According to a report by members of the preceding expedition, bones of penguins bigger than men have been found on Seymour Island off the eastern coast of the peninsula. London paleontologists declared the specimens to be relics of a fossil race of penguins that flourished in the Miocene period 25 million yr ago.

Scientists in the News

Four new appointments to the staff of the National Science Foundation have been announced:

Lawrence R. Blinks of the Hopkins Marine Station, Stanford University, is assistant director for biological and medical sciences.

George H. Hickox of the University of Tennessee, is program director for engineering sciences in the mathematical, physical, and engineering sciences division.

William C. Steere of Stanford University, is program director for systematic biology in the biological and medical sciences division.

Peter van de Kamp, of Swarthmore College, is program director for astronomy in the mathematical, physical, and engineering sciences division.

John G. Reinhold, biochemist noted for his research in liver diseases, received the 1954 Ernst Bischoff award of $500 at the 6th annual meeting of the American Association of Clinical Chemists. Reinhold is associate professor of physiological chemistry in medicine at the Graduate School of Medicine, University of Pennsylvania, and is in charge of chemistry at the Pepper Laboratory of Clinical Medicine at that institution.

At a recent ceremony in Princeton, N.J., **Albert Einstein** and **James Franck** of the University of Chicago received honorary degrees from Technion, Israel Institute of Technology. Two other Nobel prize winners were present—Niels Bohr, Danish physicist, and Isidor I. Rabi, nuclear physicist and member of the General Advisory Commission of the Atomic Energy Commission. Some 150 educators, Israeli officials and Jewish leaders attended the function, which was under the auspices of the American Technion Society.

Ernest Edward Charlton, consultant in nucleonics and radiation at the General Electric Research Laboratory at Schenectady, has been chosen as the Mehl honor lecturer for the annual convention of the Society for Nondestructive Testing, to be held in Chicago, 1–4 Nov. at the Morrison Hotel.

George Glockler, formerly deputy chief scientist of the Office of Ordnance Research, U.S. Army, and a past vice president of the AAAS, has been appointed chief scientist of OOR. He succeeds T. J. Killian, who resigned recently to become dean of the School of Engineering and Architecture at Catholic University.

Henry J. Oosting, plant ecologist, has been named chairman of the Duke University botany department. He succeeds **Hugo L. Blomquist,** who has held the post since 1934. Though retiring from the chairmanship, Blomquist will continue to serve in the department as a full professor.

Robert R. Wilson, director of Cornell University's Newman Laboratory of Nuclear Studies, is at the University of Paris as a consultant in the construction of an electron accelerator of the synchrotron type. In addition to working on the accelerator, he will lecture at the Sorbonne as well as the University of Paris before his return to Ithaca in February.

Sharp and Dohme, division of Merck and Co., Inc., has announced the retirement of **Paul S. Pittenger,** vice president and director of quality control. Pittenger joined the H. K. Mulford Co. as director of pharmacodynamic research in 1910, and held that position until 1925. Two years later he was appointed director of pharmacologic research at Sharp and Dohme, which named him assistant general superintendent in 1928 and assistant to the president in 1929. He became vice president in 1930 following the merger of Sharp and Dohme and H. K. Mulford.

In addition to his positions in industry, Pittenger for 20 yr served as demonstrator, lecturer, and instructor in bioassaying at the Medico-Chirurgical College of Philadelphia, the Philadelphia College of Pharmacy and Science, and Temple University College of Pharmacy. His course in bioassaying was the first to be offered in the United States.

The American Society of Medical Technology has designated **John William Chubbuck,** editor of the *Newsletter* of the Texas Society of Medical Technologists, as winner of the Medical Technologist of Texas award.

Abram V. Tunison has been promoted to the position of chief of the Fish and Wildlife Service's branch of game fish and hatcheries. He succeeds **O. Lloyd Meehean,** who was appointed recently as assistant to the director in charge of technical staff services. **William Hagen, Jr.,** chief of the section of salmon propagation, will become assistant chief of the branch of game fish and hatcheries, filling the vacancy left by Tunison.

Carl Tolman, who has been associated with Washington University, St. Louis, as a member of the faculty and in various administrative posts since 1927, has been named vice chancellor and dean of faculties. Tolman has been acting in that capacity since June 1953. Since 1946 he has held the position of dean of the Graduate School of Arts and Sciences, and for the past 9 yr he has also been professor of geology and geological engineering and chairman of that department.

The Department of the Army has appointed **Per K. Frolich,** vice president of the chemical firm of Merck and Co., Inc., Rahway, N.J., to the top civilian post in the Army Chemical Corps. Expected to take office about 1 Dec., he will serve in the dual capacity of deputy chief chemical officer for scientific activities, and chief scientist for the corps.

Recently **Sydney Chapman,** president of the International Union of Geodesy and Geophysics, Great Britain, and chairman of the special committee for the International Geophysical Year, spoke at the National Science Foundation on "Rocket exploration of the geomagnetic field."

At Wesleyan College, Macon, Ga., **Mary Nancy Green** has resigned to join the department of chemistry at Wellesley College, and **Lisabeth Beynon,** formerly of Mercy College, Detroit, Mich., has accepted a chemistry professorship.

Geoffrey Edsall, editor-in-chief of the *Journal of Immunology* since December 1948, has resigned effective 1 Oct. His successor is **John Y. Sugg,** associate professor of bacteriology and immunology, Cornell University Medical College, 1300 York Ave., New York 21.

Charles R. Holmes, research geophysicist of the New Mexico Institute of Mining and Technology, has just returned from 2 yr of study and research at Pennsylvania State University. He will resume his studies of underground water resources.

Arthur D. Little, Inc., industrial consulting and research firm in Cambridge, Massachusetts, has announced that **Charles M. Apt** joined the staff of the Flavor Laboratory in August. Apt had previously served on the faculty of Amherst College, where he taught physics and analytical and general chemistry. He also conducted research in light-scattering from solutions of nucleic acids isolated from mammary adenocarcinoma tumor tissue in mice.

John M. Neff, former assistant manager of the ceramics and minerals research department at Armour Research Foundation of Illinois Institute of Technology, has been promoted to manager. He succeeds **Einar P. Flint,** who resigned to accept a position as director of inorganic research at the Mallinckrodt Chemical Works, St. Louis, effective 1 Oct.

New York University College of Medicine has announced that **William C. Von Glahn,** chairman of the department of pathology, has retired with the title of professor emeritus. He is succeeded by **Lewis Thomas,** former professor of pediatrics and internal medicine at the University of Minnesota Medical School. Von Glahn received his M.D. from the Johns Hopkins University Medical School in 1915. Prior to joining N.Y.U. in 1941, he held teaching appointments at Johns Hopkins and the College of Physicians and Surgeons, Columbia University. He has served on the staffs of Johns Hopkins Hospital and City Hospital in Baltimore, and of Presbyterian Hospital, Bellevue Hospital, and New York University Hospital in New York. In addition to other society affiliations, Von Glahn is a past vice president and president of the New York Pathological Society and past president of the New York Clinical Society.

Norton Nelson, professor of industrial medicine in the Post-Graduate Medical School of New York University–Bellevue Medical Center, has been appointed director of the Institute of Industrial Medicine at the center. He succeeds Anthony J. Lanza, who becomes a consultant to the institute.

James M. Sharp, recently associated with atomic energy development programs at the Sandia Corp. and the Air Force Special Weapons Center, has been appointed supervisor of special projects for the physics department of the Southwest Research Institute. He will be responsible for industrial and military research operations in systems analysis, analog computers, energy conversion methods, and electromechanical development.

Necrology

Henry F. Beckman, 78, professor emeritus of obstetrics at Indiana University Medical School, Bloomington, Ind., 5 Oct.; **Nolan R. Best,** 38, rocket and guided missile expert at the Naval Research Laboratory, Washington, D.C., 29 Sept.; **John L. Flagg,** 81, president of the Watson-Flagg Engineering Co., New York, N.Y., 2 Oct.; **Roderic Hill,** 60, retired air chief marshal and rector of the Imperial College of Science and Technology, London, Eng., 6 Oct.; **Luther G. Paul,** 83, retired surgeon and former professor of medicine at Harvard University, Cambridge, Mass., 6 Oct.; **Charles W. Perkins,** 76, surgeon, radiologist, and author, Norwalk, Conn., 7 Oct.; **James M. Phalen,** 81, surgeon, specialist in tropical diseases, author, and editor emeritus of the *Military Surgeon,* Washington, D.C., 5 Oct.; **Ward E. Pratt,** 64, chemical engineer, expert on metal corrosion, and inventor, West Orange, N.J., 5 Oct.; **Edward C. Schneider,** 80, pioneer in aviation medicine, developer of Schneider physical fitness index, and professor emeritus of biology at Wesleyan University, Middletown, Conn., 3 Oct.; **Alfred M. Tozzer,** 77, former curator of Middle American archeology and ethnology at the Peabody Museum, Hudson professor of archeology and professor emeritus of anthropology at Harvard University, Cambridge, Mass., 5 Oct.; **Robert S. Wilson,** 38, nuclear physics investigator at the Australian National University, Melbourne, Australia, 4 Oct.; **Monte M. Wladaver,** 53, physician and research specialist in the preservation of woods.

Meetings

Potential industrial health hazards, as well as the major health problems now facing manufacturers, will be taken up at the 19th annual meeting of **Industrial Hygiene Foundation** to be held at Mellon Institute, Pittsburgh, Pa. 17–18 Nov. Some 800 industrial and professional leaders from all parts of the United States will participate in medical, engineering, chemical-toxicological, legal, and joint medical-legal conferences on the first day and in the main meeting, designed particularly for management, on the 18th. They will represent the 360 member companies of the foundation.

The **American Society of Tropical Medicine and Hygiene,** the American Academy of Tropical Medicine, and the American Society of Parasitologists, will meet together in Memphis, Tenn., 3–6 Nov.

The 40th annual clinical congress of the **American College of Surgeons** will be held in Atlantic City, N.J., 15–19 Nov. More than 10,000 fellows of the college and their guests from all over the world will participate in this postgraduate education meeting. Charles deT. Shivers of Atlantic City is chairman of the Atlantic City Advisory Committee on Arrangements.

Frank Glenn, New York, current president of the college, will preside at the opening evening session at which Alan Gregg, New York, and Robert H. Kennedy, New York, will be guest speakers. On the final evening Alfred Blalock, Baltimore, will be installed as president for the coming year. Evarts A. Graham of St. Louis is chairman of the board of regents and Paul R. Hawley of Chicago is the director.

The **Southeastern Work Conference on Biology Teaching,** 28 Aug.–6 Sept., was sponsored by the National Association of Biology Teachers in cooperation with the American Institute of Biological Sciences. It was made possible by a $15,000 grant from the National Science Foundation and was codirected by Richard L. Weaver, associate professor of conservation at the University of Michigan, and Samuel Meyer, head of the botany department at Florida State University. There were nearly 100 participants in the conference, a group that was made up of college professors of botany, zoology, biology, and science education; high school teachers of biology; and supervisory and administrative personnel, including deans and state superintendents of education. Seventeen states, the District of Columbia, and the Canal

Zone were represented. Delegates from the AAAS, the National Research Council, and the National Science Foundation took part.

Using group discussion methods, biology teaching in high schools and colleges was considered from many viewpoints, such as that of the research biologist, the college teacher, the methods teacher, the secondary school teacher, and of administrative officers at all levels. Basic problems of all groups were presented and considered by the entire conference, the first to bring together a large number of people from all levels of teaching and administration for simultaneous consideration of problems in the teaching of biology. The total biology training program from the introductory high school biology course through advanced professional training of biology teachers and researchers was brought into sharp focus.

Many of the problems discussed related to the acute shortage of qualified high school biology teachers. The U.S. Office of Education has recently issued a statement that less than 60 percent of the high school biology teachers have the equivalent of a college major in that field. As high school enrollments increase, the shortage is becoming more acute. At the same time, an increasing number of high schools are requiring all students to have courses in biology and a decreasing number of college graduates are choosing high school biology teaching as a profession. The conference approached this problem from two standpoints: to improve the quality of training for the high school biology teacher, and to make his job more attractive after he has gotten into it.

To improve training, the conference recommended that the prospective high school biology teacher have a college major in biology which will include one year of general biology or courses in general botany and general zoology; at least one-third of this training should be in plant science. The conference recognized the need for field studies in the teacher's advanced training. To provide a broad training that will make modern biology meaningful and at the same time qualify the teacher to instruct in related scientific fields, it was recommended that he have a year each of chemistry and physics, with laboratory work, a year of mathematics, and some training in earth science. It was further recommended that he take the necessary education courses to fulfill his state's certification requirements. A course in the methods of teaching high school biology was considered essential. It was agreed that the high school biology teacher should have the same broad training in the humanities, social studies, and communication skills as teachers in other areas. The conference regarded these recommendations as the minimum training needed by the high school biology teacher to prepare him for his work.

The conference recognized the high school teacher's need for consultative services. It was felt that too often other assignments in the consultant's schedule took precedence over providing advice. For that reason, it was recommended that the various states take the necessary steps to concentrate their consultant services in the hands of a single individual who would have no other major responsibilities.

In order to meet the demands for increased numbers of high school biology teachers, the conference suggested that this position be made more attractive (i) by the establishment of salary and pension schedules more nearly comparable to those of other professional groups in industry and government, (ii) by encouraging promising high school students to choose biology teaching as a profession, (iii) and by issuing temporary certificates to persons who do not meet the minimum requirements provided they continue their professional training toward meeting such requirements.

The conference recognized that the high school student is to be training to take his part in community life and that his work in biology should make a definite contribution to that goal.

A symposium on **The Nuclear Reactor and the University** will be given 12–13 Nov. by Vanderbilt University in cooperation with Oak Ridge National Laboratory and the Oak Ridge Institute of Nuclear Studies. Eight persons—four from Oak Ridge National Laboratory, two from the Atomic Energy Commission, and two from the university—will give papers at the symposium, which will be held on the Vanderbilt campus in Nashville. All interested engineers and scientists are invited.

Available Fellowships and Awards

On 24 Sept. the **Rockefeller Foundation** took action that provided a grant of up to $30,000 for the **Gordon Research Conferences of the AAAS.** The money is to be used for the payment of expenses involved in the attendance of foreign scientists at the more biological of the conferences. The fund is available during the 3-yr period beginning 1 Jan. 1955. Up to $12,000 may be used in any one year.

The **Life Insurance Medical Research Fund** invites faculty members to nominate for 1955–56 predoctoral fellowships medical students who wish to spend a year in research training. *Nomination deadline is 30 Nov.* These fellowships are open to those who have completed 1 yr or more of work as a medical student. Stipends are from $2000 to $2400. For further information write to the Scientific Director of the Fund at 345 E. 46th St., New York 17.

The **Lalor Foundation** has announced a new program for 1955 to include 20 summer or interim awards to college and university faculty members for study and research in which chemistry or physics is used to attack problems in any of the biological sciences. Each award will normally not exceed $900 to single men and women and $1100 to married persons, unless there are special circumstances.

It is the hope of the foundation that not only sig-

nificant research, but also more dynamic teaching of science may result from this new program and that younger faculty members may find opportunity by this means to advance in their profession. The foundation is discontinuing its previous program of full-year predoctoral and postdoctoral fellowship awards. Detailed information about the new program may be obtained from C. L. Burdick, Director, Lalor Foundation, 4400 Lancaster Pike, Wilmington 5, Del. *Applications must be filed before 15 Jan. 1955.*

Instruments

Beckman has announced a new ultraviolet near-infrared **spectrophotometer** with a wavelength range of 220 to 2700 mμ. The instrument has a lead sulfide detector and a quartz monochromator to permit high-speed transmittance recording. It provides double-beam operation with a single receiver and fast-beam chopping (480 times/sec). The resolution is 0.1 mμ at 220 mμ and 5 mμ at 2500 mμ. Any of five scanning speeds can be selected. (Bull. 352–38, Beckman Instruments, Inc., Dept. Sc., Fullerton 1, Calif.)

A **blood arithmometer** has been designed to make complete blood counts automatically. After a sample is placed in the counting chamber, a built-in microscope with dark-field illumination images the cells in the plane of a precision aperture located in front of a photomultiplier. As the counting chamber is scanned by a light beam, cells with images either wholly or partly within the area of the precision aperture are detected. The photomultiplier detects each image that passes across its cathode, and the resulting electronic pulses are fed into a computer circuit. The count is displayed on a dial calibrated in terms of 10^6 red cells/mm^3 and 10^4 white cells/mm^3. The accuracy is ±3 percent. (Jarrell-Ash Co., Dept. Sc., 26 Farwell St., Newtonville, Mass.)

A new high-speed **microoscillograph** is available for the single-sweep recording of three simultaneous phenomena at frequencies up to 10,000 Mcy/sec. Three beams and three independent electrostatic deflection systems are provided. The beams are focused to writing spots 0.01 mm in diameter by an electromagnetic lens. Records are made on a photographic plate big enough for 27 oscillograms; it is inserted into the vacuum chamber through a vacuum lock. (Central Research Laboratories, Inc., Dept. KP-Sc., Red Wing, Minn.)

Miscellaneous

The Rockefeller Institute for Medical Research announces the publication of a new journal to be known as ***The Journal of Biophysical and Biochemical Cytology.*** It will be the purpose of this new publication to provide a common medium for the presentation of morphological, biochemical, and biophysical studies of the structure of cells and their components and of the functions of these components. The *Journal* will give special attention to investigations dealing with cellular organization at colloidal and molecular levels. Papers will be favored which integrate information derived from newer approaches to cytology, such as histochemistry, cytogenetics, cytochemistry, electron microscopy, and x-ray diffraction.

Because of the significance of photographic evidence, the publishers of the Journal will endeavor to insure excellence of photoengravings and printing. The length of articles will be limited to approximately 25 printed pages exclusive of plates. Short notes of 1500 words or less will be accepted; review articles will be published only on invitation. The format and styling used by the *Journal of Experimental Medicine* and the *Journal of General Physiology,* presently published by The Rockefeller Institute, will be followed by this new *Journal.*

It is proposed to publish one volume per year, the issues appearing bimonthly: the price will be $7.50 per volume. In order that manuscripts may be considered for inclusion in the first number which will be published in January 1955, they must be received *not later than 1 Nov.*

The *Journal* will be edited by Richard S. Bear, Massachusetts Institute of Technology; H. Stanley Bennett, University of Washington; Albert L. Lehninger, Johns Hopkins University; George E. Palade, Rockefeller Institute; Keith R. Porter, Rockefeller Institute; Francis O. Schmitt, Massachusetts Institute of Technology; Franz Schrader, Columbia University; Arnold M. Seligman, Sinai Hospital of Baltimore. Manuscripts should be addressed to the Editors, *The Journal of Biophysical and Biochemical Cytology,* The Rockefeller Institute for Medical Research, New York 21.

The following **chemicals** are wanted by the Registry of Rare Chemicals, Armour Research Foundation of Illinois Institute of Technology, 35 W. 33 St., Chicago, Ill.: tangeretin; thevetine; murexine; meroxyl; crotonyl isothiocyanate; ketoglutaric aminase; cyclophorase; 4-ureido-5-imidazole carboxylic acid; nobiletin; arecolidine; beta-ortho-cresyl glutaric acid; mucinase; para-iodophyenyl isothiocyanate; gentisic aldehyde; diethylphosphine; 1,2,4,5-tetrahydroxybenzene; 2,5,4′-triethoxydiphenyl-1-diazonium chloride; cis-propenyl bromide; 2,4,2′,4′-tetrohydroxydiphenyl; anthracene-9,10-dicarboxylic acid.

Richard M. Hewitt, chairman of the **American Medical Writers' Association** educational committee, has announced that there is a great **need for $500 scholarships** to support students wishing to enroll in the newly organized courses in medical editing and writing that are available at the Universities of Missouri, Illinois, and Oklahoma. Interested persons should communicate with Dr. Hewitt, Section of Publications, Mayo Clinic, Rochester, Minn.