amount of effort going into hard-headed, realistic studies of what can be done to diminish the chance of war aside from maximizing the power of the Western bloc as a deterrent. The effort has now been institutionalized at a very high level of the government in the Disarmament Administration, whose chief will hold a rank equivalent to Under Secretary of State.

Most Americans involved in this work feel that the Russians are being a good deal slower than we are in preparing to deal realistically with the problem, and there is a fairly sharp difference of opinion among the Americans who attended the latest Pugwash conference as to how far the Russians have come. The Russian delegates were well informed about the results of studies made by American students of the problem, but were slow to concede the validity of the studies, many of which point up the enormous difficulty of working out satisfactory agreements, even conceding a genuine desire to do so on all sides. The Russian reluctance to accept some of the less palatable American analyses is fairly understandable, considering the number of Americans who are quick to dismiss the difficulties thrown up by these analyses (such as, for example, those discussed in Fred Iklé's article in the current *Foreign Affairs*) as merely the work of people who don't believe in disarmament and who are interested only in trying to throw up roadblocks.

A basic point implicit in such analyses is the lack of any basis for an assumption that almost any disarmament agreement is better than none. Not only abstract analyses of what may happen in the future, but concrete analyses of the actual effects of such earlier disarmament efforts as the naval limitations treaty of the 1920's, show that what wishful thinking recommends as the road to peace, unpleasant realities may eventually demonstrate was a step toward war.

The restrained optimism that can be found among people working in this area today comes not from any expectation that great developments are on the horizon, but from the feeling that the mere fact that the two strongest powers are beginning to think more realistically and to talk more and more frankly about the steps that could lessen the chance of war is itself a step toward lessening the chance of war, and perhaps a more important step than any specific agreements that might result.—H.M.

News Notes

National and International Atomic Energy Groups Sign Cooperation Agreements

An agreement for cooperation between the International Atomic Energy Agency and the Inter-American Nuclear Energy Commission became effective on 22 December when it was signed in Washington by Sterling Cole, IAEA director general, and Jesse Perkinson, executive secretary of IANEC. A few days later another international atomic agreement was concluded when the European Atomic Energy Community, the United Kingdom Atomic Energy Authority, and the United States Atomic Energy Commission announced that they had decided to pool their efforts to collect and disseminate information concerning translations of literature in the field of nuclear physics, especially translations from languages unfamiliar to Western readers, such as Russian and Japanese.

IAEA-Latin American Terms

The first document signed was a relationship agreement that had previously received unanimous approval from the IAEA General Conference and from the Council of the Organization of American States. Under its terms, IAEA and IANEC "will act in close cooperation with each other and will consult each other regularly in regard to matters of common interest." Among the types of cooperation envisaged in the agreement are exchange of information and documents; close working relationships between the staffs of the two organizations; arrangements for the cooperative use of personnel, materials, services, equipment and facilities; and reciprocal representation at meetings.

The commission has already rendered valuable assistance to IAEA in its activities in Latin America—activities such as holding training courses and organizing assistance missions. The IAEA, for its part, has previously recognized the connection between the work of the two organizations by inviting IANEC to send observers to the IAEA General Conference.

The agreement with IANEC is the second of its kind to be concluded by IAEA with a regional organization. An agreement with the European Nuclear Energy Agency became effective in November 1960.

The Translation Agreement

Under the Euratom-UKAEA-USAEC agreement, a central information office, Transatom, has been established at Euratom's Brussels headquarters.

It will function in two ways. First, it is publishing a monthly *Transatom Bulletin* (the first issue was December 1960) which will list existing translations recently reported to the Brussels office, as well as new translations planned by international or national institutions and private firms in the European Community, the United States, the United Kingdom, and other areas.

Second, all data relating to translations, including translations made before the establishment of Transatom, are being collected and recorded in a master file in Brussels. Copies of this card file have been offered to appropriate institutions in countries with great interest in the nuclear field.

Efforts are being made to avoid duplication of work when the European Translation Centre, to be established at Delft (Holland), is set up. The scope of that institution is much wider: it will cover all scientific and technical material in the field of exact sciences.

The *Bulletin* is available on a subscription basis from: Transatom, c/o Euratom, 51 rue Belliard, Brussels, Belgium, at $8 a year, air mail $16.

Zoologists Speak Out on Birth Control and on Animal Use Law

Zoologists pioneered in taking a public stand on two major controversial issues when a resolution urging government support of birth control research and training and another opposing a Senate bill that would regulate the use of laboratory animals were passed by the American Society of Zoologists at its annual meeting in New York on 29 December. The birth control resolution says:

"The American Society of Zoologists views the mounting rate of population growth, especially in the world's poorest areas, as a principal factor contributing to global conditions of human misery, famine and under-education, and we urge our Government to adopt policies in keeping with this country's tradition of deep sympathy for human suffering.

"In many countries, officially adopted policies of voluntary fertility control are rendered ineffectual, and virtually in

all countries, including our own, the desire of some segments of the populace for smaller families remains unfulfilled because of the lack of simple, acceptable methods for the voluntary regulation of human reproduction. The freedom to limit family size is still a privilege of the educated few and should be extended to all people. Furthermore, the distribution of scientific and medical information should be unencumbered by restrictive laws or prejudicial attitudes.

"As biological scientists, we recommend that our Government implement a policy indicative of its dedication to the service of mankind by assuring the full support of its appropriate agencies to research in the biology of reproduction and fertility control and by offering programs of assistance in these fields for the training of American as well as foreign scientists."

The resolution on proposed legislation on the use of laboratory animals reads:

"Senate bill 3570 would regulate the use of all vertebrate animals in research and teaching. Such legislation would reduce freedom in day-to-day planning and conduct of research and would reduce the amount of research in many areas which provide basic information for medicine, agriculture and conservation of animal resources. This proposed legislation is discriminatory in its implication that animal biologists are suspect and inhumane in laboratory practice. The American Society of Zoologists, assembled in convention in New York City in December, 1960, strongly opposes Senate bill 3570."

AAAS Laurentian Hormone Conference Announced

The 1961 Laurentian Hormone Conference of the AAAS will be held at Hoberg's Resort, Lake County, Calif., 4–9 September. Participants from abroad will include Jamshed R. Tata, Wenner-Grens Institute, Stockholm, Sweden; J. B. Brown and G. D. Matthew, Clinical Endocrinology Research Unit, Edinburgh, Scotland; and C. W. Emmens, Department of Veterinary Physiology, Sydney, Australia.

Investigators interested in attending should make application to the Committee on Arrangement of the Laurentian Hormone Conference, 222 Maple Ave., Shrewsbury, Mass., at an early date and in any event *no later than 10 May*. A conference rate of $14.50 per day per person is extended to all invited participants, with reduced rates for children. Since the number of participants is necessarily limited by available accommodations, all applications are screened and invitations to attend are issued by the second week in June. Invitations issued to applicants will include members of their families, and indication of the number of such members should be made upon application to the committee.

Solar Telescope Construction Begins

At Kitt Peak National Observatory, Tucson, Ariz., construction of the world's largest solar telescope is under way. The instrument is being built for the National Science Foundation by the Association of Universities for Research in Astronomy, Inc., operator of the new national observatory. The NSF has allotted $4 million to the Kitt Peak solar program.

The distinguishing feature of the construction is a hole 380 feet long, cored into the top of Kitt Peak, a mountain 40 miles southwest of Tucson on the Papago Indian Reservation. A deep tunnel, 15 feet in diameter and blasted into the mountain at an angle of approximately 32 degrees, it looks more like a mine shaft than an astronomical research facility.

Rising nearby is a large pillar of steel and concrete upon which will rest a motor-driven flat mirror, called a heliostat. Standing 110 feet above the ground, the heliostat will track the sun and reflect an image of it down an angled shaft extending from the top of the pillar to the bottom of the mountain tunnel, a total distance of almost 500 feet.

From that point the solar image will be reflected 280 feet to a third mirror, which will project it into an underground observing room. There the image—as large as 34 inches in diameter—may be photographed or directed to spectroscopes for study by scientists.

As Alan T. Waterman, NSF direc-

Site of the solar telescope at Kitt Peak National Observatory in the Quinlan Mountains of Arizona. The large hole in the foreground will contain the observing room. The tower at left contains meteorological instruments used in the site survey. Famous Baboquivari Peak in the distant background is the sacred mountain of the Papago Indians, on whose reservation the national observatory is located.

tor, pointed out recently, "when completed, the huge instrument will give solar researchers more revealing views of the sun than have ever been possible from the earth. Such observations will increase substantially man's meager knowledge of the star that keeps our planet alive." A. Keith Pierce, associate director of the Kitt Peak Observatory, is in charge of the solar program. He expects the solar instrument to be completed in 1962.

The solar telescope is one of several major instruments in use or under construction at the new national research center for optical astronomy. A 36-inch stellar reflector has served researchers since the observatory was dedicated in March. The housing for an 80-inch stellar reflector is nearing completion. Grinding of the mirror for the reflector will begin next year, according to Nicholas U. Mayall, observatory director.

Major Temperature Symposium Scheduled

The technical program is now complete for the most comprehensive meeting ever to be held on the subject of temperature measurement, the 1961 Symposium on Temperature, Its Measurement and Control in Science and Industry, to be held in Columbus, Ohio, 27–31 March. About 200 papers will cover temperature measurements from absolute zero to 10,000,000°K and will deal with subjects ranging from the temperature of the human body to the temperature of the sun. Almost every area of the physical, biological, medical, and engineering sciences will be represented. The conference is sponsored by the American Institute of Physics, the Instrument Society of America, and the National Bureau of Standards.

Temperature ranks as one of the most important of the physical quantities, and efforts to measure and understand it have provided some of the most difficult and challenging problems in experimental and theoretical physics. Accurate measurement of temperature is becoming increasingly important in the automatic control of industrial processes, in engineering applications of atomic energy, and in the development of high-speed aircraft and missiles.

Symposium participants who will present the 200 papers in March come from universities, government and military research laboratories, and industrial research laboratories in this country, as well as from research centers in Australia, Germany, Netherlands, Canada, Soviet Russia, and Great Britain.

Three international symposia have previously been held to permit exchange of information among the various groups that work with extreme temperatures and precision temperature measurement and to stimulate pertinent research. The first symposium was held in Chicago in 1919; the second, in New York City in 1939, the third meeting, in 1954, dealt with fundamental concepts and summarized the developments that had taken place since 1939. The proceedings of these symposia, *Temperature, Its Measurement and Control in Science and Industry* (Reinhold, New York), have become basic reference works in the field.

Persons interested in the March symposium may obtain further information by writing to V. W. Sikora, Instrument Society of America, 313 6th Ave., Pittsburgh 22, Pa.

News Briefs

Defense chief to stay. Herbert F. York, Defense Department director of research and engineering, has agreed to stay on for a "limited period" after the Administration changes hands on 20 January.

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Explorer VIII silent. Explorer VIII, the ionospheric direct-measurement satellite, is no longer transmitting. The last signal heard from the 90-pound craft, which was launched by the National Aeronautics and Space Administration on 3 November from Cape Canaveral, was received at Quito, Ecuador, on 27 December. A useful lifetime of between 2 and 3 months had been predicted for the satellite, which was entirely dependent for power upon a self-contained battery pack. More than 700 miles of magnetic tape have been used to record the data transmitted.

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Ocean floor to be drilled. In March, test drillings are scheduled to begin in the project to pierce the earth's crust and reach the mantle. The site chosen is 40 miles east of Guadalupe, an island off the west coast of Mexico, in 12,000 feet of water. The depth of the earth's crust under the oceans is only a few miles, whereas under the continents it is many times deeper.

During the month of test operations it is hoped that three or four 1200- to 1500-foot holes can be drilled in order to gain experience and information that can be used in designing a rig to bore 16,000 feet, the depth necessary to accomplish the final mission.

The National Academy of Sciences and the National Science Foundation have announced that a contract has been awarded to the Global Marine Exploration Company of Los Angeles for the test work off Mexico. Willard Bascom is technical director of the project, known as Mohole.

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Egyptian expedition. An expedition to Egypt, sponsored jointly by Yale and the University of Pennsylvania Museum, leaves this month as part of an international project to rescue ancient ruins which otherwise will be flooded forever in the next 4 years by the backwaters of the new Aswan Dam. The three-year project will be financed by a $45,000 grant from the Bollingen Foundation and a matching fund from the Eckley B. Coxe, Jr. Fund of the University of Pennsylvania.

William K. Simpson, of Yale's Peabody Museum, will be in charge of the expedition. Plans have been made to establish a Yale-Pennsylvania camp in Nubia, 20 miles north of the Second Cataract on the eastern bank of the Nile and under the shadow of the temple of Abu Simbel, built by Rameses II in 1270 B.C. The team of archeologists will spend the first 3 months of 1961 in Egypt; two other trips are scheduled for 1962 and 1963.

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Mercury administrative shift. The National Aeronautics and Space Administration has announced that its Space Task Group, charged with carrying out Project Mercury and other NASA manned space flight programs, has officially become a separate NASA field element. Located at Langley Field, Va., Space Task Group, which is composed of some 600 persons, has been reporting administratively to the Goddard Space Flight Center at Greenbelt, Md. Under the new organization, group director Robert R. Gilruth will work directly under Abe Silverstein, NASA director of Space Flight Programs, Washington, D.C.

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Chemistry meeting. The 18th International Congress of Pure and Applied Chemistry, to be held in Montreal,

Canada, 6–12 August, invites submission of contributed papers for all sections of the congress except the wood and organic chemistry symposia, which will have invited papers only. English, French, or German abstracts of not more than 200 words must be submitted *by 15 February* to the Secretary of the Central Committee, 18th International Congress of Pure and Applied Chemistry, National Research Council, Ottawa, Canada.

* * *

Physics apparatus competition. The Committee on Apparatus for Educational Institutions of the American Association of Physics Teachers has announced that, as part of its program to make new and improved apparatus available to physics teachers, it will conduct a competition for new apparatus for the teaching of college physics. Prizes will be awarded for new pieces of apparatus which are judged most likely to advance the teaching of college physics. New apparatus includes that which is neither commercially available nor well known through published descriptions.

Apparatus entered in the competition will be exhibited, and the judging will take place, at the Annual Meeting of the American Association of Physics Teachers, 1–4 February, at the Hotel New Yorker, New York City. The competition is supported by a grant from the Central Scientific Company.

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Free radicals. The Fifth International Symposium on Free Radicals will be held at the University of Uppsala, Uppsala, Sweden, 6-7 July, under the auspices of the university's Institute of Physical Chemistry. Each session will start with a plenary lecture, followed by 10-minute contributed papers. Preprints will be available at the opening of the symposium. Titles must be submitted *by 31 January*, and the manuscripts of the papers accepted must be submitted by 1 May. All correspondence should be addressed to: Fifth International Symposium on Free Radicals, Institute of Physical Chemistry, Uppsala, Sweden.

Scientists in the News

George W. Beadle, Nobel Prize-winning geneticist of California Institute of Technology, has been named chancellor of the University of Chicago. He will relinquish his responsibilities as acting dean of the institute's faculty and chairman of the Division of Biology within 90 days, to assume his new post. He succeeds Lawrence A. Kimpton, who resigned last September to join the Standard Oil Company (Indiana).

Beadle, a past president of the AAAS, is a member of the President's Science Advisory Committee and of the Committee on Genetic Effects of Atomic Radiation of the National Academy of Sciences–National Research Council, as well as chairman of the Research Advisory Council of the American Cancer Society.

Wallace Brode, former State Department science adviser and a past president of the AAAS, was elected president of the Society of the Sigma Xi at the national meeting of the society that took place on 29 December during the AAAS meeting in New York. Brode, who succeeds **Frank M. Carpenter** of Harvard University, will serve until 1963. **Frederick D. Rossini** of the University of Notre Dame was named president-elect.

The unusual simultaneous election of both a president and president-elect was occasioned by the withdrawal from the presidency of **Donald B. Prentice** of Yale University. Prentice, voted president-elect 2 years ago, was advised by his physician that he should not serve and asked to be relieved.

Two new members of the Sigma Xi executive committee were also named at the New York meeting—**Harry L. Bowman** of Drexel Institute of Technology and **E. F. Osborne** of Pennsylvania State University. They replace retiring members **Detlev W. Bronk** of the Rockefeller Institute and **W. T. Ziegler** of Georgia Institute of Technology.

The Franklin Institute has announced the retirement of **Nicol H. Smith** as director of the institute's Laboratories for Research and Development. Until a successor is named, J. G. Richard Heckscher, executive vice president of the Franklin Institute, will direct the laboratories.

Smith has been laboratories director for 11 years. He joined the institute staff in 1932 as associate director in charge of chemistry for the science museum. When the laboratories were formed in 1946, he was appointed director of chemical engineering and physics. Three years later he became the over-all director.

Smith, who holds a bachelor's, master's, and doctor's degree from the University of Pennsylvania, is recognized for his technical work on the atomic weight of scandium and for his research on germanium, tungsten, and magnesium oxychloride cements.

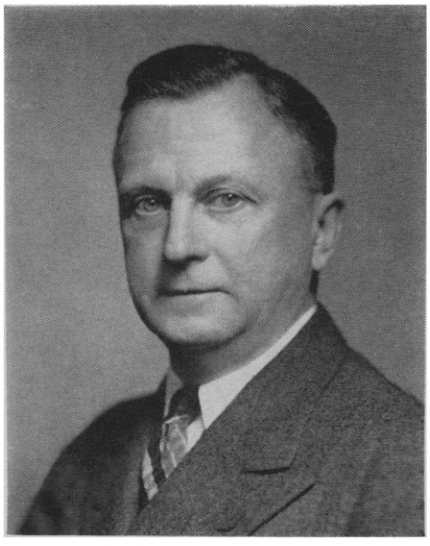
George M. Murphy, professor and head of the department of chemistry at New York University, has been named to the newly created post of associate dean of arts and sciences at N.Y.U. He will have special responsibility for instructional and research programs in science.

While a research assistant at Columbia University in the 1930's, Murphy, along with Harold C. Urey and F. G. Brickwedde, shared in the discovery of deuterium. Urey received the 1934 Nobel prize in chemistry for his work in the project.

Victor A. Sutter of El Salvador, his country's Minister of Health and Welfare from 1956 to 1958, has been appointed secretary-general of the Pan American Sanitary Bureau, Washington, D.C., regional office of the World Health Organization. Sutter has a long background in the field of international health; he spent 6 years at WHO headquarters in Geneva, first as director of the Divisions of Communicable Disease and Public Health Services and later as assistant director-general in charge of Advisory Services.

The Soil and Health Foundation in Allentown, Pa., has awarded a $4000 Dental Research Prize to **Albert Schatz**, chief of the division of microbiology at the Philadelphia General Hospital and associate in medicine at the University of Pennsylvania Graduate School of Medicine. Schatz is internationally recognized as the codiscoverer of streptomycin and is well known for his proteolysis-chelation theory of dental caries, a new approach, derived in part from the work of Charles F. Bodecker, to the problem of tooth decay.

Harold S. Osborne of Upper Montclair, N.J., retired chief engineer of the American Telephone and Telegraph Company, has won the Edison Medal of the American Institute of Electrical Engineers. The award will be presented at the institute's winter general meeting in New York, 29 January–3 February, at the Hotel Statler. Osborne, who is a



Harold S. Osborne [Fabian Bachrach]

consultant with the International Electrotechnical Committee, was cited "for his contributions to the art of telecommunication and his leadership and vision in extending its application; for his achievements in the coordination of international communication and in national and international standardization; and for his advancement of the engineering profession."

John W. Bartlett will retire on 1 July as chairman of the dairy science department at Rutgers University. He will be succeeded by **John P. Mixner**, Rutgers professor, who has been on the staff of the Rutgers Dairy Research Farm in Beemerville since 1947. He is noted for his research in artificial breeding and the physiology of mammary-gland growth.

Alfred M. Mayo of the National Aeronautics and Space Administration has been elected president of the American Astronautical Society for 1961. Mayo joined NASA last May as assistant director for bio-engineering in the Office of Life Sciences, after 20 years with the Douglas Aircraft Company.

J. Desmond Clark, English anthropologist and archeologist specializing in prehistoric Africa, has been appointed professor of anthropology at the University of California, Berkeley, effective 1 July. Clark is director of the Rhodes-Livingstone Museum in Northern Rhodesia, where, since 1938, he has conducted field research in ethnology, paleontology, and prehistoric archeology.

Floyd W. Denny, Jr., a member of the faculty of the University of North Carolina School of Medicine since 1952, has been named head of the department of pediatrics. He succeeds E. C. Curnen, Jr., who recently accepted a similar position with Columbia University's College of Physicians and Surgeons, New York.

Frederick Urbach, assistant medical director of the Skin and Cancer Hospital of Philadelphia, a unit of the Temple University Medical Center, has been appointed professor of research dermatology at the center.

John D. Spikes has returned to his regular position as professor and head of the department of experimental biology at the University of Utah after serving for 2 years as a specialist in cell physiology with the U.S. Atomic Energy Commission's Division of Biology and Medicine, Germantown, Md.

Recent Deaths

Douglas H. Fryer, Rye, N.Y.; 69; industrial psychologist and a retired professor at New York University; one of the first to apply psychological research methods to management and military problems; in 1930 became the first president of the Association of Consulting Psychologists, which established one of the first psychology clinics in New York; president of the American Association for Applied Psychology in 1937 and a vice president of the AAAS, in 1950, and chairman of its psychology section; had served as editor of various journals of psychology; 24 Dec.

Frank R. Ober, Boston, Mass.; 79; orthopedic surgeon known for his treatment of the effects of poliomyelitis; joined the Children's Hospital in 1913, and since 1946 had been chief orthopedic surgeon emeritus; from 1937 to 1946 was John B. and Buckminster Brown clinical professor of orthopedic surgery at the Harvard Medical School, with which he became associated in 1915; 26 Dec.

Maurice C. Pincoffs, Baltimore, Md.; 74; professor of medicine at the University of Maryland School of Medicine, where he had been on the faculty for 36 years; a brilliant diagnostician, served as physician-in-chief at University Hospital from 1922 to 1954, simultaneously heading the medical school's department of medicine; from 1954 until retirement in 1957, organized and directed a new department of preventive medicine and rehabilitation; 8 Dec.

Herbert F. Prytherch, Salisbury, N. C.; 62; former director, U.S. Fish and Wildlife Service Laboratory, Beaufort, N.C., from 1931 to 1947; well known for his his studies on the biology of the oyster; 26 Dec.

Burech Rachlis, Philadelphia, Pa.; 64; ear, nose, and throat specialist and a member of the Temple University medical faculty; 31 Dec.

Frederick E. Russell, Louisville, Ky.; 90; public health specialist who developed the first successful typhoid vaccine while serving in the Army, from which he retired in 1920 as a brigadier general; former general director of the International Health Board of the Rockefeller Foundation and former professor of preventive medicine and epidemiology at Harvard Medical School; 29 Dec.

Erwin Schroedinger, Vienna, Austria; 73; eminent mathematical physicist and co-winner, with P. A. M. Dirac, of the 1933 Nobel prize for developing the wave mechanics theory to explain seeming contradictions in the nature of light; taught at the universities of Vienna, Stuttgart, Breslau, and Zurich; in 1927 succeeded Max Planck as head of the department of technical physics at the University of Berlin; with the rise of Hitlerism, went to Oxford, Graz, and the Dublin Institute for Advanced Studies, where he stayed from 1938 to 1956, when he returned to the University of Vienna; noted for contributions to the theory of matter, the physical theory of colors, and the quantum theory; in Dublin, set forth a new theory for the origin of life, and in 1947 reported that he had succeeded in expanding Einstein's theory of relativity and in proving the possibility of utilizing it for research in the field of electromechanical energy; 4 Jan.

E. J. Tiffany, Atlanta, Ga.; 59; former Public Health Service officer who until his retirement last year was chief training officer for the laboratory branch of the Communicable Disease Center in Atlanta; former associate professor of bacteriology at the Long Island College of Medicine; 25 Dec.

Erratum: On page xix in the index to volume 132 [*Science* (30 Dec. 1960)], the entry in line 32, column 2 (Powers, E. L. *See* C. F. Ehret, 1768) should appear before the previous entry. E. L. Powers, rather than C. F. Powell, was coauthor of the report "Reduction of radiation sensitivity of dry bacterial spores with hydrogen sulfide" on page 959.