Meeting the Challenge

It would be nice if the superlative feat of building an artificial moon to circle the earth were a matter only of scientific significance. Then, aside from proper honors to the responsible scientists and engineers and to the country that made their work possible, interest would center on the data to be contributed to the International Geophysical Year. But, under the circumstances of a continuing threat to our efforts to preserve world peace, the fact that the first space satellite was made in the Soviet Union and not in the United States becomes an important, perhaps a dominant consideration.

Whatever the historical causes, the pervasive impression in this country has been that in science, and especially in something called "know-how," the Soviet Union plays follow-the-leader to the more industrialized Western nations. At one level, we like to dwell on such items as the latest Russian cars, which, down to the very emblem of manufacture, look like nothing so much as American models of several years ago. At another level we like to think of Soviet espionage as Russia’s principle source of new scientific knowledge. At a third level, we like to think about Lysenko.

This impression has needed correction, and its holders have now had a rude awakening in a completely convincing demonstration of the excellence of Russian science and technology. The extent of the Soviet lead in those parts of physics, chemistry, metallurgy, and electronics that bear on rocket technology is not publicly known; it may or may not be known to our intelligence officers. But one piece of evidence was up in the sky on 4 October 1957 for all to see and hear. Of course, not all Americans needed this demonstration. Mathematicians, experimental scientists, and engineers who have visited Russia in recent years have come home with complimentary accounts of what they saw.

The success of the American response to the challenge implied by Soviet science and technology will be measured by something much more fundamental than the speed with which this particular feat is matched. Both the U.S. and the U.S.S.R. are capable of great achievement, but neither is capable of simultaneous supremacy on all fronts. In the military sphere, the tremendous cost of developing new weapon systems places an all-encompassing defense program beyond our means. Selection is essential. Our hope is that, if we cannot do everything in the way of conventional weapons, advanced weapons, and ballistic missiles, we can find the wisdom to select the right points at which to apply the full measure of our strength.

There are various means in this country by which the executive and legislative branches of the government come to decide upon our best bets in allocating finite resources among competing needs. The use of scientist and engineer advisers in making some of these decisions will certainly increase, as will public attention to matters of science education and research support. It is not to our credit that these changes will come about as a result of Russian success, but it will be to our benefit if scientists and government administrators learn better how to work together in the grim gamesmanship of international diplomacy.—J. T.
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Other points stressed were the importance of bringing an adequate concern for human values into the developing science of industrial management and the need for experimentation in the structure and control of industrial undertakings; support for the organizations and agencies studying and dealing with the fundamental problem of population; and the need to keep the political, social, and cultural development of the poorer countries in step with their economic expansion.

At the final plenary session, the congress adopted, for action, a statement which posed the problem of defense in the present arms situation. "We all have vital interests in the world to be defended and extended: how can it be done without wrecking the whole human enterprise? That is the crude question which demands a set of realistic answers." Our thinking on this question is evidently confused, precipitate, and frightened. The situation is unprecedented, and our habitual political ideas and ideals have become too suddenly obsolescent for clear and united thinking relative to new and adequate forms of political behavior to emerge without a very special and informed effort. What is wanted first of all, to focus and enlighten world thinking on this most vital human question, is a world commission of experts of the highest caliber in the fields of politics, sociology, philosophy, and the sciences to examine the problem of the defense and development of legitimate interests in all its aspects. This has become a common human problem, not merely the problem of sovereign states or of power blocs, and it is this new situation that requires new thinking, which must be world thinking. The congress adopted the statement and authorized the executive committee of the International Humanist and Ethical Union to try to mobilize an informed public demand for such a conference or commission.

H. J. Blackham
Ethical Union, London, England

Structure of the Nucleus

The Robert A. Welch Foundation will sponsor a research conference on The Structure of the Nucleus in Houston, Tex., 20-22 November. Some 500 scientists from all over the world are expected to attend.

blem in the Quantum Theory of Many Particle Systems"; and W. F. Libby, "Nuclear Techniques in Chemistry."

For information write to the Robert A. Welch Foundation, 20th Floor Bank of the Southwest Building, Houston 2, Tex.

Technical Writers

The Society of the Association of Technical Writers and Editors will hold its fifth annual national convention 13–15 November at the Statler Hotel in New York. This is the first convention held since the merger of the Association and the Society of Technical Writers. The theme of the convention will be the role of the publications expert in advancing the frontiers of science. For information, communicate with Donald R. Alt, 3506 94th St., Jackson Heights 72, N.Y.

International Cancer Congress

The International Union Against Cancer will award a limited number of travel grants to enable young scientists to attend the Seventh International Cancer Congress in London, England, 6–12 July 1958. Applicants under 35 who do not yet hold senior appointments will receive preference if they have made significant contributions to cancer literature.

The grants will cover part or all of the travel expenses from and to the country of residence, but no subsistence allowance will be provided. For application forms write to I. Berenblum, Chairman, Committee for Young Scientists, U.I.C.C., Weizmann Institute of Science, Rehovoth, Israel.

Forthcoming Events

November


26–28. Central Assoc. of Science and Mathematics Teachers, 57th annual, Chicago, Ill. (L. Panush, Henry Ford High School, Detroit 19, Michigan.)


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THE LATEST (APRIL, 1957!) ALL-UNION CONFERENCE ON APPLICATION OF RADIATION AND ISOTOPES IN THE NATIONAL ECONOMY AND SCIENCE, SESSIONS ON:

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Abstracts of 55 papers from this session, held in Moscow, March 25–April 2, 1957, sponsored by the Ministry of Chemical Industry, USSR, and the Division of Chemical Sciences, Academy of Sciences, USSR.

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TECHNICAL SCIENCES AND THE INDUSTRIAL USE OF ISOTOPES

Abstracts of 179 papers from this session, held in Moscow, April 2–5, 1957, sponsored by the Central Committee on Utilization of Atomic Energy, Council of Ministries, USSR, and the Academy of Sciences, USSR, Sections: Metallurgy and Metal-Working; Machine Building, Control of Technological Processes; Construction of Apparatus; Methods and Apparatus for Radiometry and Dosimetry of Nuclear Radiations.

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9-11. Fluorides Symp., Cincinnati, Ohio. (Secretary, Inst. of Industrial Health, Kettering Laboratory, Eden and Bethesda Aves., Cincinnati 19.)


The following 43 meetings are being held in conjunction with the AAAS annual meeting:

AAAS Acad. Conference, annual (Father P. H. Yancey, Spring Hill College, Mobile, Ala.). 28 Dec.


Alpha Chi Sigma (R. L. Hicks, 1130 E. Jefferson St, Franklin, Ind.).


American Assoc. of Hospital Consultants (J. B. Norman, 8 South Church St., Greenville, S.C.)


American Geophysical Union (E. M. Brooks, Dept. of Geophysics, St. Louis Univ., St. Louis 8, Mo.).

American Medical Assoc. Committee on Cosmetics (Mrs. V. L. Conley, AMA, 535 N. Dearborn St., Chicago, Ill.). 28-29 Dec.

American Meteorological Soc. (K. C. Spengler, AMS, 3 Joy St., Boston, Mass.).


American Physiological Soc. (F. A. Hitchcock, Dept. of Physiology, Ohio State Univ., Columbus 10.)

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American Statistical Assoc. (V. L. Anderson, Statistical Lab., Purdue Univ., Lafayette, Ind.).  
Association for Computing Machinery (J. E. Robertson, Digital Computer Lab., Univ. of Illinois, Urbana).  
Astronomical League (W. Garnatz 2506 South East St., Indianapolis).  
Beta Beta Beta (Mrs. F. G. Brooks, P.O. Box 336, Madison Sq. Station, New York 10). 27 Dec.  
Ecological Soc. of America (A. A. Lindsey, Dept. of Biological Sciences, Purdue Univ., Lafayette, Ind.) 27–29 Dec.  
Metric Assoc. (J. T. Johnson, 694 West 11 St., Claremont, Calif.).  
National Assoc. of Science Writers (J. Troan, Pittsburgh Press, Pittsburgh, Pa.).  
Philosophy of Science Assoc. (C. W. Churchman, Case Inst. of Technology, Cleveland, Ohio).  
Sigma Delta Epsilon, annual (Miss M. Chalmers, Dept. of Chemistry, Purdue Univ., Lafayette, Ind.). 26–30 Dec.  
Society for Investigative Dermatology (H. Beerman, Univ. of Pennsylvania School of Medicine, Philadelphia 3). 28–29 Dec.  
United Chapters of Phi Beta Kappa, annual address (C. Billman, 1811 Q St., NW, Washington, D.C.). 27 Dec.  
27–28. Linguistic Soc. of America, Chicago, Ill. (A. A. Hill, Box 7790, University Station, Austin 12, Tex.)  
28–29. American Folklore Soc., annual, Chicago, Ill. (M. Leach, Box 5, Bennett Hall, Univ. of Pennsylvania, Philadelphia 4, Pa.)  
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_WRITE FOR BULLETIN 2156_

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LETTERS

The editors take no responsibility for the content of the letters published in this section. Anonymous letters will not be considered. Letters intended for publication should be typewritten double-spaced and submitted in duplicate. A letter writer should indicate clearly whether or not his letter is submitted for publication. For additional information, see Science 124, 249 (1956) and 125, 16 (4 Jan. 1957).

Science and Literature

The article "Literature, Science, and the Manpower Crisis," by Joseph Gallant [Science 125, 787 (1957)] has been brought to the attention of our organization.

It is unfortunate that a magazine which goes under the title Science should be so unscientific in checking an article which it publishes. It is no less unfortunate that a supposedly responsible teacher of English, the chairman of a high-school department, should know so little about his own national organization.

Gallant refers to the Combined Book Exhibit as "an official publication of the National Council of Teachers of English." The statement is untrue. This pamphlet was merely a give-away item at a commercial booth at an NCTE convention; the advertisers had the privilege of displaying and advertising any books they chose, just as do exhibitors at a science convention. The official publications of NCTE are our four magazines and the publications listed in our catalog; even a glance at this catalog would have shown that the Combined Book Exhibit was not included.

Gallant is apparently unaware of the three reading lists that are official NCTE publications: Adventuring With Books, for elementary pupils; Your Reading, for junior-high pupils; and Books For You, for the senior-high level. A casual examination of these booklets would have changed Gallant's article considerably. In the first booklet, under the headings "Biology—The World of Living Things" and "Physical Science," no fewer than 130 titles are listed, in contrast to only 27 in a section on poetry, nine in a section on music, and nine in a section on art. In addition, other books on scientific subjects are listed elsewhere, under such headings as "Conservation and Natural Resources," "Persons, Places, and Things," "The World Today," and "Biography."

In the junior-high list are 152 titles, under the headings "Science Fiction," "Science and Scientists," "Inventions and Inventors," and "Fun and Meaning in Math." Other books on science appear in other parts of this list. In contrast, there are 56 books on music and musicians, 23 in a group called "Back Stage With Authors."

The senior-high list is classified differently; hence, a less precise count is possible. However, in one section alone—"I Read To See with the Eyes of Science"—there are 43 titles. In another—"I Read To Feel the World's Life"—there are books by or about two of Gallant's favorites, Roy Chapman Andrews and Carl Akeley, as well as over 200 others, many directly related to science.

Gallant mentions a number of authors who should, in his opinion, be included in reading lists. Before jumping to the conclusion that they are not included, Gallant should have observed that the following among his recommended authors are represented in current NCTE reading lists and that others have been included in former lists: Andrews, Beebe, Byrd, Teale, Heyerdahl, Dimars, Coutteau, Taziiff, Hobein, Linton, Jaffe, Shippen, Carson, and Ceram.

I do not choose to debate Gallant's main point that it is the English teacher's job to recruit scientists and to encourage still more emphasis on science than already exists—although a great deal can be said on both sides of this question.

J. N. Hook
National Council of Teachers of English, Champaign, Illinois

It would be pointless to debate with Hook on the semantics of the word official as used in his third paragraph. The Council had a committee of its members listed as being in charge of a book exhibit at the convention. The Council cannot shrug off responsibility for a "giveaway" which consisted of 80 printed pages of annotated book listings and which, moreover, was mailed on request months after the national convention and in a specially prepared envelope. Such a booklet, given away gratis, substantially competed with the Council's other reading lists, whose excellence is unquestionable.

The point made in my article, however, did not deal with committee supervision in the National Council of Teachers of English or with the effective educational work performed by Hook's and my organization. It pointed out the implications of the fact that any recommended bibliography in reading for the high school should give so little emphasis to science and should fail to list a single scientific title under the category "Understanding the Universe," which was given over entirely to books of devotion and ritual. This interpretation of "understanding the universe" raises a graver semantic question for the Council and
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What is deplorable is a pre-Copernican mentality in the age of nuclear physics. This mentality will not promote survival — unless it be of a pre-Copernican world. Surely this is not Hook’s wish.

JOSEPH GALLANT Mount Vernon, New York

The “Abominable Snowman”

It is probable that the footprints that have been reported from the snows of the Himalayas as being those of the “Abominable Snowman” may have been made by several orders of mammals [W. L. Straus, Jr., Science 123, 1024 (1956)]. In April 1953, tracks that looked like the photographs published in several popular magazines as being those of the “Abominable Snowman” were seen by the writer along the snow-covered trail to Baltistan, near Sonamarg, Kashmir. Some of the tracks were old, and some were fresh. The fresh tracks were large — 4 to 6 inches wide and 10 to 14 inches long—and appeared to be made by a biped. In some of the fresher tracks the imprint of the toes became more and more pronounced as one followed the track, and then the toes disappeared and the tracks became larger. The bottom of the new and larger tracks showed a pattern like a rough weave but within a few yards became smooth and free from any distinguishing marks.

The tracks were made by men wearing snow sandals to protect their feet, not from the snow but from ice crystals that form from thawing and freezing. These sandals were woven of a plant that seemed to be much like the cattail, Typha. The plant grows in marshy areas and is cut in the fall and dried, but before it is too dry it is woven into a crude sandal. These snow sandals are worn by many inhabitants, either because they are too poor to buy leather or because they belong to a Buddhist sect that will not use leather. The sandals first wear under the toes, so that the imprint of the toes is clear in the snow. When the wearer goes too far, the foot-covering is discarded and the track changes suddenly. Discarded sandals were examined but were not saved, for the “Abominable Snowman” was considered to be the product of the imagination of men who saw “animal” tracks that had been enlarged by melting of the snow. Although the use of such snow sandals may be a local custom, it is quite possible that some of the tracks reported by explorers were made by men wearing the type of sandal described here.

ROBERT K. ENDERS
Department of Biology, Swarthmore College, Swarthmore, Pennsylvania

EQUIPMENT NEWS

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Science does not assume responsibility for the accuracy of the information. All inquiries concerning items listed should be addressed to Science, Room 740, 11 W. 42 St., New York 36, N.Y. Include the name(s) of the manufacturer(s) and the department number(s).

COMPARATOR MICROPHOTOMETER, for measurements on photographic plates, uses a tiny mirror to deflect light from the line being measured, while light from the remainder of the field is used to project an image. The measuring optics are able to resolve the double component of the iron “triplet” at 3100 A when the linear separation on the plate is 28 μ. Scattered light is less than 0.5 percent. The electrical output of the multiplier phototube is measured by a servo slide-wire assembly. An electronic control circuit automatically selects the point of minimum transmission of the spectral line and stops the scanning operation to permit reading. (Jarrell-Ash Co., Dept. S668)

SWEEP OSCILLATOR has two ranges, 10 to 500 and 950 to 1950 Mc/sec. Two series of calibration marks are provided at harmonic frequencies of 5- and 50-Mc/sec crystal-controlled oscillators. Sweep-width is variable from 5 to 40 Mc/sec with sweep rate approximately 60 cy/sec. The output waveform contains less than 5 percent harmonic distortion at full output. (Kay Electric Co., Dept. S670)

POWER SUPPLY furnishes high-voltage excitation for multiplier phototubes. Output voltage ranges from 500 to 5000 v-d-c. The unit is designed for scintillation-counting applications. Regulation is 0.005 percent, and noise and ripple are 50 mv peak-to-peak. A standard cell furnishes voltage reference. Current capacity is 10 ma. (Hammer Electronics Co., Inc, Dept. S671)

FUME HOOD is fabricated with spherical corners throughout to eliminate points where hazardous deposits may accumulate. The hoods are made of stainless steel integrally welded and ground smooth. Service connections are mounted on raised circular platforms that are pressed into the sheet metal. Cup sinks and sink bowls are integrally welded. (Warren Corporation, Dept. S673)

ZONE MELTING device for purifying silicon eliminates container contamination by eliminating the container. The silicon rod to be purified is supported rigidly at its ends, while the molten zone, which is swept along the rod by induc-
tive heating, is supported only by surface tension. Stability of the molten zone is achieved by proper proportioning of load and generator impedances. P-type silicon with resistivity of 16,000 ohm cm and minority lifetime of 1200 μsec has been made in this way. (Bell Telephone Laboratories, Dept. S676)

**DISTILLED-WATER TANK** is equipped with built-in ultraviolet light for continuous sterilization of contents. Tanks are available in capacities from 5 to 1000 gal and in cylindrical or box form. (Barnstead Still and Sterilizer Co., Dept. S674)

**RADIOISOTOPE-EXCITED LAMP** provides illumination for marking applications for periods of 10 years or more without need for power or maintenance. The unit is 6 in. long and has a luminous diameter of 5 in. Brightness is 1000 μlum. Depending on the phosphor used, light emission may be in the blue, green, yellow, or orange regions of the spectrum. (United States Radium Corp., Dept. S679)

**CIRCUIT BOARD** for "breadboard" circuit development uses 130 conductive cells, arranged in a quadrilateral pattern. Location of the conductive cells is identified by intersections of a network of grid lines. Component leads are inserted into the cells through an elastic covering to make connections. Individual components may be replaced or reassembled without damaging leads or loosening contacts. (Van-Dee Products, Dept. S680)

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**BALL-AND-DISK INTEGRATORS** adapted to strip chart recorders provide integration against time or against chart travel. Read-out may be by visual counter with manual reset, by digital printing on the same chart, or by pips along the edge of the chart with every tenth pip in the reverse direction. (Royson Engineering Co., Dept. S692)

**INFRARED SPECTROMETER** provides automatic interchange of prisms and cams for selection of optimum optical elements for a given wavelength range. The instrument is of the double-beam, automatic-recording type with wide choice of scanning speed and chart scales. The optical system is evacuated to avoid atmospheric absorption. Slits are magnetically operated. The radiation receiver is a Golay pneumatic detector. A built-in oscillo-

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- **Ozone meter** bases its operation on the opacity of ozone to ultraviolet radiation in the region of 2537 A. The standard model is sensitive in a range from 0 to 40 mg/lit with accuracy of ±5 percent of full scale. Units for other ranges are available on special order. (Welsbach Corporation, Dept. S685)

- **Computer recorder** accepts asynchronous digital data from several sources and combines them in any selected sequence together with record numbers and manually inserted, fixed data. The data are accumulated in an internal core storage and are then transferred to magnetic tape in the format and sequence desired for input to computers. Up to 40,000 12-bit words per second can be accepted. Visual indications of the last record number and the last test-data values are furnished. (Epsco Inc., Dept. S688)

- **Trap**, for isolating an ultrahigh-vacuum system from contaminating oil vapor, permits achievement of pressures as low as 10^-13 mm-Hg in a glass system using an ionization gage as a pump. A continuous spiral of corrugated copper foil, 0.003 in. thick, completely fills the Pyrex trap. The trap is effective for over a month of continuous operation before it must be baked out to remove adsorbed gases. (Consolidated Electrodynamics Corp., Dept. S686)

- **Scaler-rate meter** combines a rate meter with a scale-of-100 counter and a four-digit mechanical counter. A digitally indicating timer measures elapsed time to 1000 minutes in hundredths of a minute. A voltage supply for counters and amplifiers is provided. Input sensitivity is 0.25 v, negative pulse. The resolving time of the scaler is 10 μsec for pulse pairs. The ratemeter has ranges 0 to 500, 0 to 5000, and 0 to 50,000 count/min with response time of 15 sec. (Nucleonic Corporation of America, Dept. S693)

- **Instrumentation camera** operating at 2800 frames per second incorporates both a rotating prism and a rotating disk shutter. The rotating prism permits continuous flow of film. Interchangeable disk shutters with openings from 5 to 60 deg are available. Film capacity is 500 ft. (Gordon Enterprises, Dept. S689)

- **Ultrasonic cleaner** incorporates a self-contained filtering system. The operating frequency is 40 to 44 kcy/sec. Capacity is 1 gal. Circulation of the fluid through the filter begins automatically after a predetermined cleaning period. (Gulton Industries, Inc., Dept. S690)

- **Microcinema apparatus** for taking motion pictures through the microscope includes platform for microscope and adjustable column and camera supports. A beam-splitter observation eyepiece permits simultaneous observation and photography. The camera swings out of the way for normal use of the microscope. (Rolab Photo-Science Laboratories, Dept. S695)

- **Rechargeable battery** is designed specifically for miniature and subminiature electrical and electronic applications. Sintered-plate, nickel-cadmium electrodes are used, and the cell is hermetically sealed and is nongassing upon recharging. Cells are available in 0.25 ma hr and 0.5 ma hr sizes. Nominal voltage is 1.2. Currents up to 15 times nominal can be drawn for short periods of time. The 0.5 ma hr cell is 1¾ in. in diameter and 5/16 in. thick. (Gulton Industries, Inc., Dept. S697)

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