

SCIENCE

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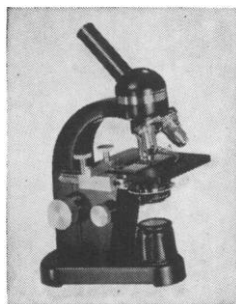


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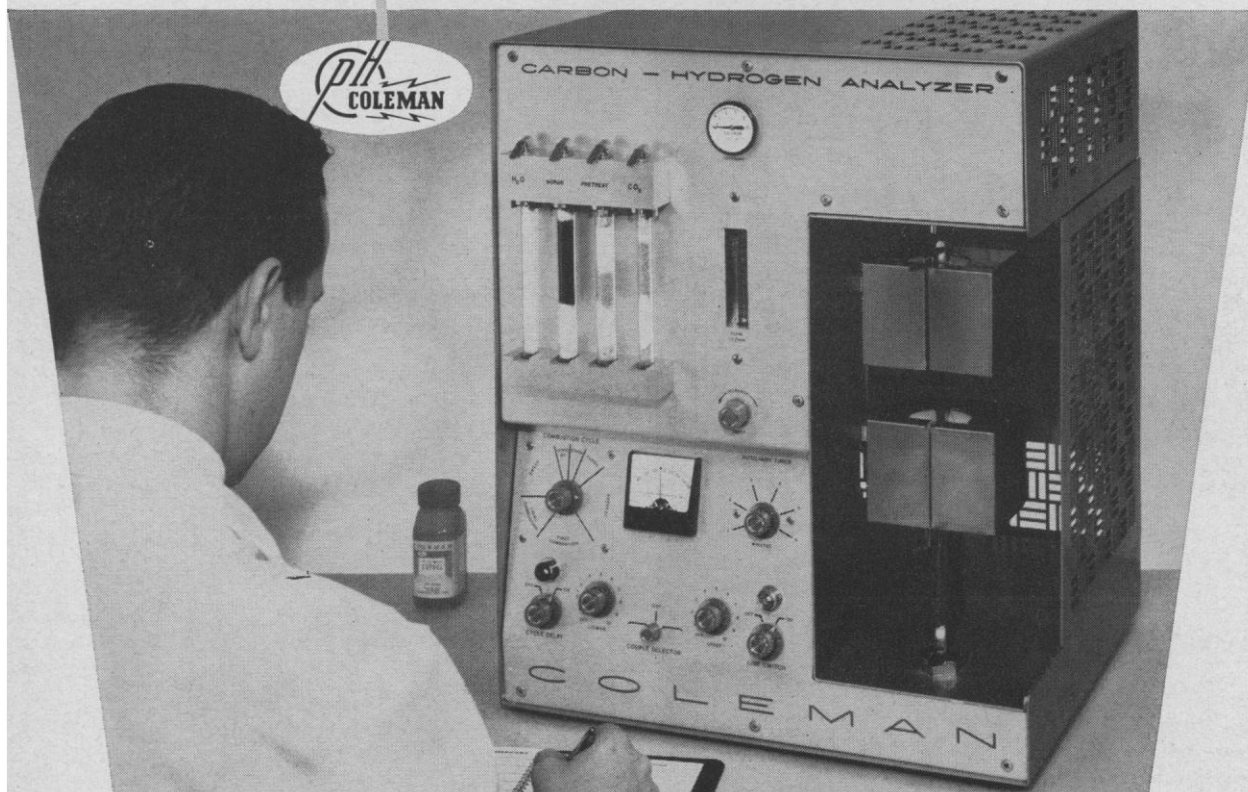
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Cover	Human figures engraved in Addaura cave on Monte Pellegrino at Palermo, Sicily, during Paleolithic age. The two central figures, with sharply bent knees and with feet apparently tied to the neck by a rope, are surrounded by other figures, some masked and some having thick hair. These realistic figures are substantially different from the exaggerated human figures of most Franco-Cantabrian art. The figure at the center measures 24 centimeters. [From <i>Palaeolithic Art</i> , reviewed on page 748]	

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Reading the Fine Print

In Geneva next week a number of Americans, some of whom have made the trip before, will sit down with their British and Soviet counterparts to attempt once again to write a treaty banning the testing of nuclear weapons. Among other matters still to be settled are key scientific disputes concerning the design of an inspection system that will deter cheating without permitting espionage. Not only must solutions be found to these scientific matters, but diplomats and policy makers—and the educated public, too—must understand these solutions. If some of the technical disputes appear minor, tiresome, and overly subtle, just how they are settled can have enormous consequences for good or ill if an inspection system is ever really established.

By way of illustrating an apparently minor point with major consequences, consider the American and Soviet proposals on the conditions under which, in the monitoring of underground explosions, an area becomes eligible for on-site inspection.

The American proposal sets a limit (actually two limits, depending on the kind of data available) on the size of an area that may be inspected. It then requires that once a seismic event is judged suspicious, that is, as possibly not a natural earthquake, the team selects the area that has the highest likelihood of containing the event. The meaning of this position may be clarified by a hypothetical example in which a house represents a nation and one room represents the size of the area that may be inspected. Imagine that a suspicious event has occurred in the house; that the inspection team evaluates for each room the likelihood that the event occurred there; and that the evidence is such that these likelihoods range from 65 percent for the kitchen to 3 percent for the nursery. Under these conditions, the team would inspect the kitchen.

In the Soviet proposal, there is first the complication that the position is not completely clear to the American negotiators, so that the problem is not only one of comparing proposals but of determining the meaning of words. The Soviet proposal requires, before inspection may take place, that the suspicious event be "localized" within an area of a certain size (the size is not larger than that proposed by the Americans for inspection). In this proposal everything depends on the meaning of "localized." If, for example, the word means that the whereabouts of the event must be known with a likelihood of 95 percent, then the Soviet procedure would, in general, make inspection more difficult than the American procedure. In the particular circumstances we have imagined, it would make inspection impossible. In our hypothetical example, the team would not be permitted to inspect the kitchen because the likelihood that the event occurred there is only 65 percent, not 95 percent.

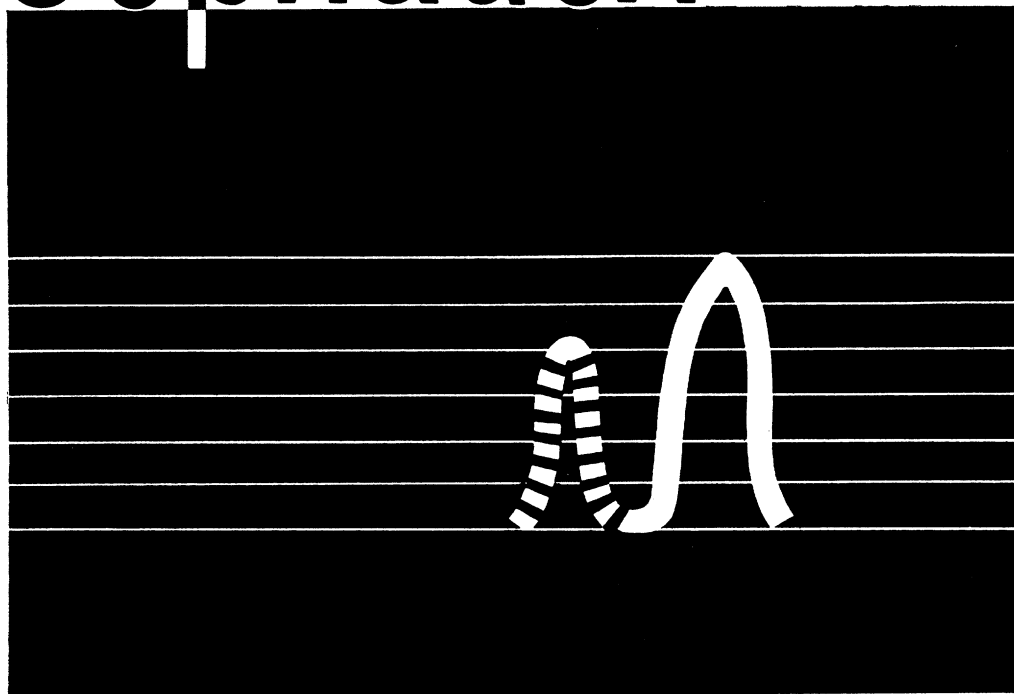
Although the Soviet proposal does not specifically say that the area that may be inspected is the same size as the area within which the event must be localized, the hypothetical example assumes this to be the case. If this is not the case, things could be even worse. Suppose, under other circumstances, that the likelihood that the event occurred in the kitchen actually is 95 percent. Inspection still would not be very effective if it were limited to an area the size of the sink.

We are not, of course, going to get perfect security, but this does not mean that we should settle for anything less than a sound treaty. An unsound treaty would be worse than the present *de facto* ban, which, at least, has the merit of not pretending to be based on an inspection system. We should all hope fervently that the coming negotiations rapidly produce a treaty, but our hope must not allow us to grow impatient over what seem to be minor technical matters.—J.T.

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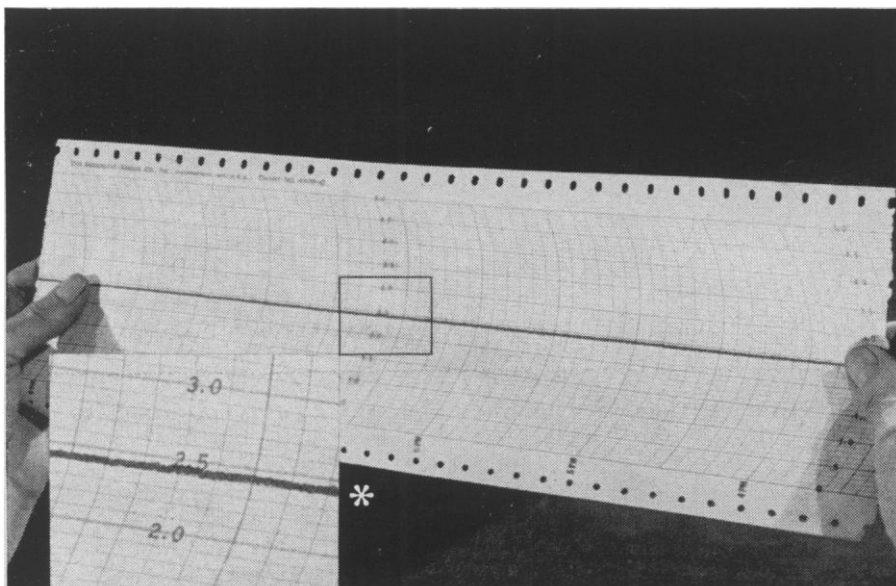


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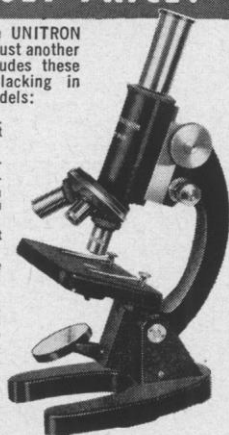
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The results of the society's scientific research projects are published and made widely available to scientists and engineers. One such project that has attracted wide interest is the development and publication of a complete bibliography of metal cutting—a compilation of everything that is known about this subject. The bibliography is the result of more than four years of ASTM-sponsored research at the John Crerar Library, where experts reviewed and abstracted over 18,000 books, papers, and pamphlets on metal cutting.

The society also publishes scores of technical papers delivered at its meetings in the course of the year. These are believed to comprise the most complete selection of up-to-date information on the scientific-engineering aspects of manufacturing available anywhere.

The society's magazine, the *Tool and Manufacturing Engineer*, is distributed to all members. Its objective is to present scientific and technological developments of interest to its readers in readable and attractive form. During 1961, the 13 issues of the magazine will contain over 1200 pages of articles.

In the field of education, in addition to sponsoring student chapters at leading colleges and universities, the society continuously sponsors on-campus conferences, where engineers from industry keep in touch with research developments and educators refresh their knowledge of industry's problems and needs. There will be at least 30 of these conferences during 1961, with a total attendance of several thousands.

The society also sponsors numerous seminars where experts present the latest developments in specialized fields of manufacturing science to relatively small groups of scientists and engineers, who are able to pool their knowledge. It is expected that there will be about ten national seminars of this kind during 1961, with literally scores of local and regional seminars. All of the papers delivered at these seminars are published and widely distributed.

Each of the society chapters meets at least nine times a year. The meetings are primarily educational in nature. At a typical meeting, one or two speakers deliver papers on some specialized aspect of science or engineering. The members then participate in panel discussions and question-and-answer sessions. One of the real contributions of these meetings is the cross-fertilization

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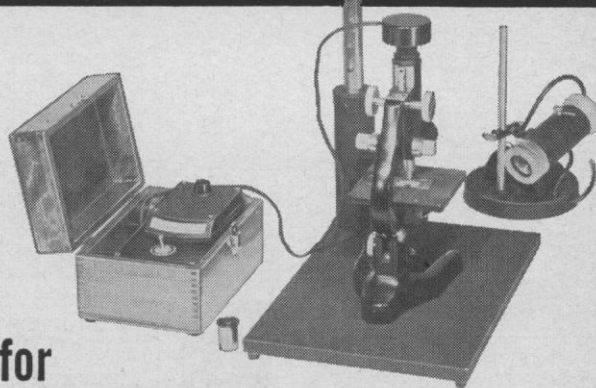


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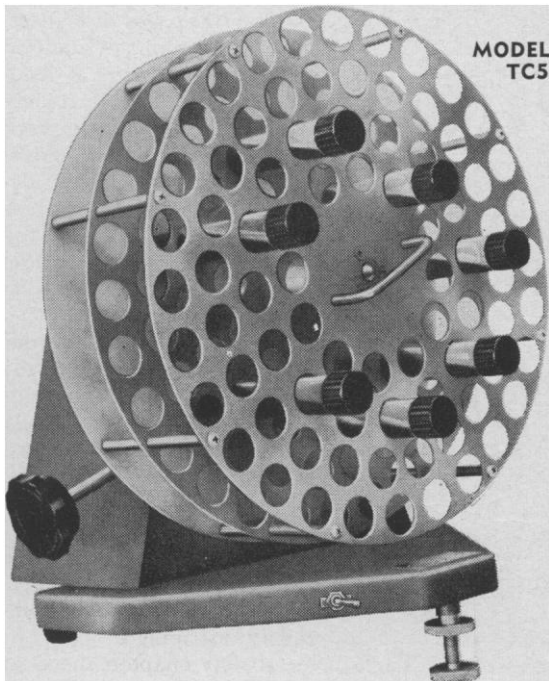
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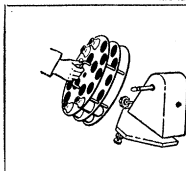
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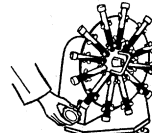
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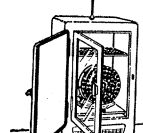
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of ideas that results when experts meet to discuss common problems. It is estimated that attendance at chapter meetings during 1961 will total over 200,000.

Each year the society holds an engineering conference and exhibit that attracts over 40,000 participants, who attend sessions on various aspects of science and engineering and visit some 6000 exhibits. The next such conference will be held in New York City, 22-26 May.

Harry Osborn, past president, will represent the society on the AAAS Council. He is research director of Tocco Division, Ohio Crankshaft Company, and is an internationally known authority on the heat treatment of metals.

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Forthcoming Events

April

9-13. American Assoc. of Cereal Chemists, annual, Dallas, Tex. (J. W. Pence, Western Utilization Research & Development Division, 800 Buchanan St., Albany 10, Calif.)

9-13. American Industrial Hygiene Assoc., Detroit, Mich. (W. S. Johnson, Bethlehem Steel Co., Bethlehem, Pa.)

9-15. American Institute of Nutrition, Atlantic City, N.J. (A. E. Schaefer, ICNND, Bldg. 16A, National Institutes of Health, Bethesda 14, Md.)

10-14. American Soc. of Civil Engineers, Phoenix, Ariz. (W. H. Wisely, 33 W. 39 St., New York 18)

10-14. Detection and Use of Tritium in the Physical and Biological Sciences, intern. symp., Vienna, Austria. (Office of Special Projects, U.S. Atomic Energy Commission, Washington 25, D.C.)

10-15. Federation of American Societies for Experimental Biology, 45th annual, Atlantic City, N.J. (M. O. Lee, 9650 Wisconsin Ave., Washington 14, D.C.)

10-15. Metallic Corrosion, 1st intern. cong., London, England. (Society of Chemical Industry, 14 Belgrave Sq., London, S.W.1)

11-13. Institute of Environmental Sciences, annual, Chicago, Ill. (H. Sanders, Box 191, Mt. Prospect, Ill.)

11-13. Ultrapurification of Semiconductor Materials, conf., A.F. Office of Scientific Research, Boston, Mass. (Miss H. Turin, Conf. Secretary, Electronics Research Directorate, Air Force Cambridge Research Lab., L. G. Hansom Field, Bedford, Mass.)

12-13. Information and Decision Processes, 3rd symp., Lafayette, Ind. (R. E. Machol, School of Electrical Engineering, Purdue Univ., Lafayette)

12-14. Agglomeration, intern. symp., Philadelphia, Pa. (Metallurgical Soc. of the AIME, 29 W. 39 St., New York 18)

12-14. Chemical Soc., anniversary meeting, Liverpool, England. (Chemical

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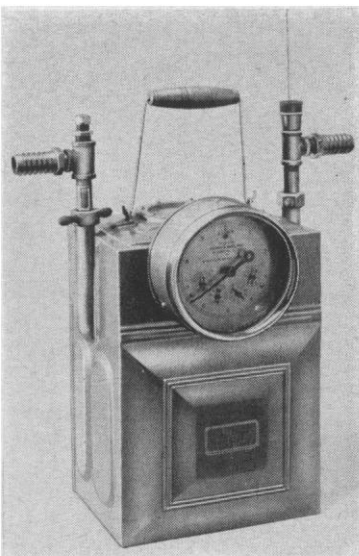
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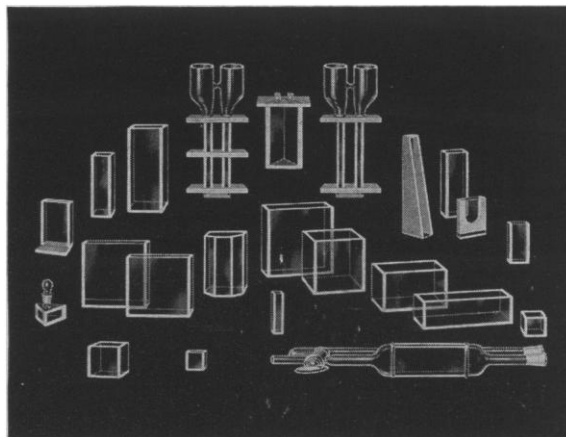
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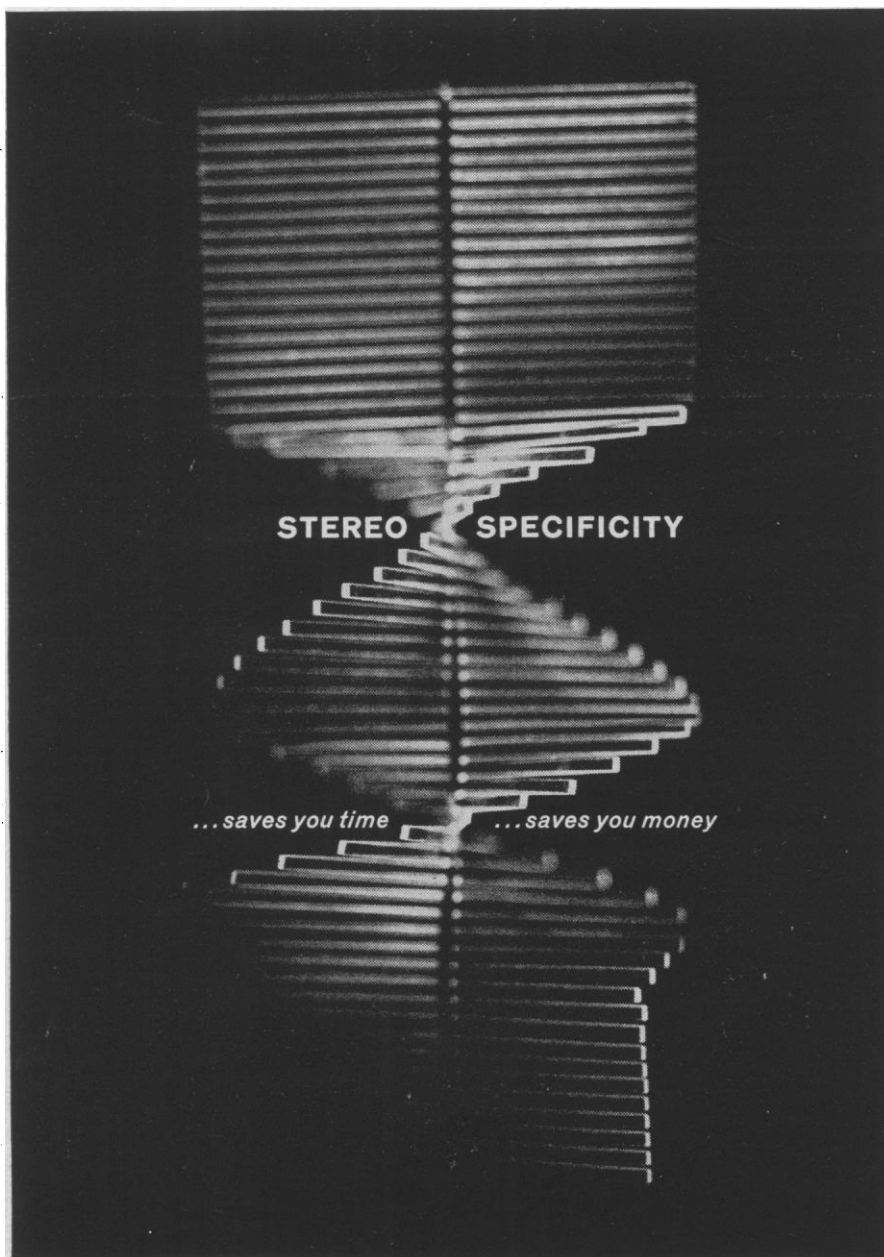
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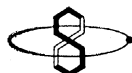
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