SCIENCE

11 August 1961

Vol. 134, No. 3476

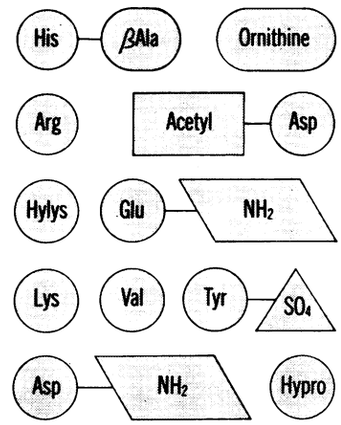
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Amino acid analysis

... quantitative analysis in 24 hours for the twenty amino acids in protein hydrolyzates ... in 50 hours for the free amino acids and related compounds in physiological fluids.

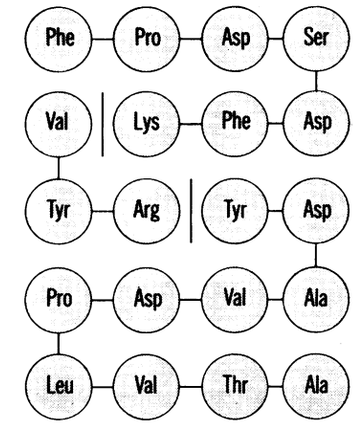
Amino acid isolation

... separation, collection, and identification of amino acids and related compounds in physiological fluids and tissue and plant extracts on both analytical and preparative scale.



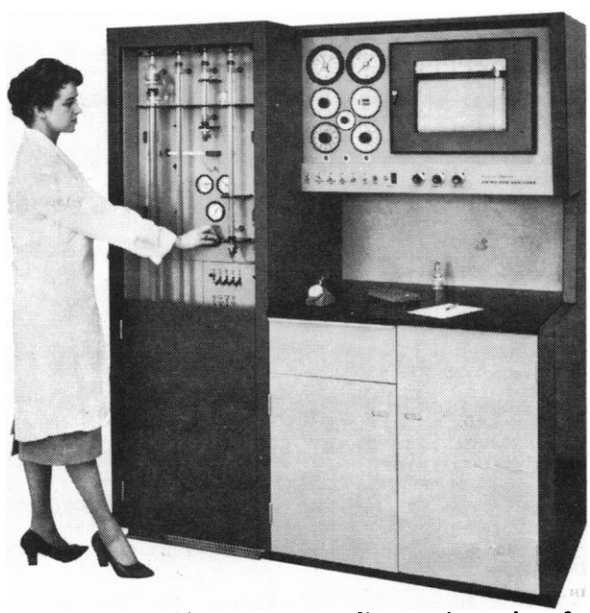
Peptide isolation

... separation, collection, and identification of peptides on both analytical and preparative scale.



MODEL 120 AMINO ACID ANALYZER DOES ALL THREE...

automatically!



To enable owners to realize maximum benefits from the Model 120, Spinco Division now offers regularly scheduled operator training sessions. These are comprehensive courses covering operation of the instrument, the chemistry involved and advanced techniques. We will be happy to send you the curriculum and schedule.

With the addition of new accessories, the 120 Analyzer has become an even more valuable time-saving tool for the biochemist. Large-bore columns allow preparative runs on mixtures of peptides or amino acids. A versatile new valving system and an accessory stream divider pump permit part of the column effluent to be analyzed colorimetrically, while diverting the main flow either to an external fraction collector, through a scintillation counter, or both.

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For latest information on the Model 120 Analyzer, and its new accessories, write Beckman Instruments, Inc., Spinco Division, Stanford Industrial Park, Palo Alto, California, and ask for Data File 120-5.

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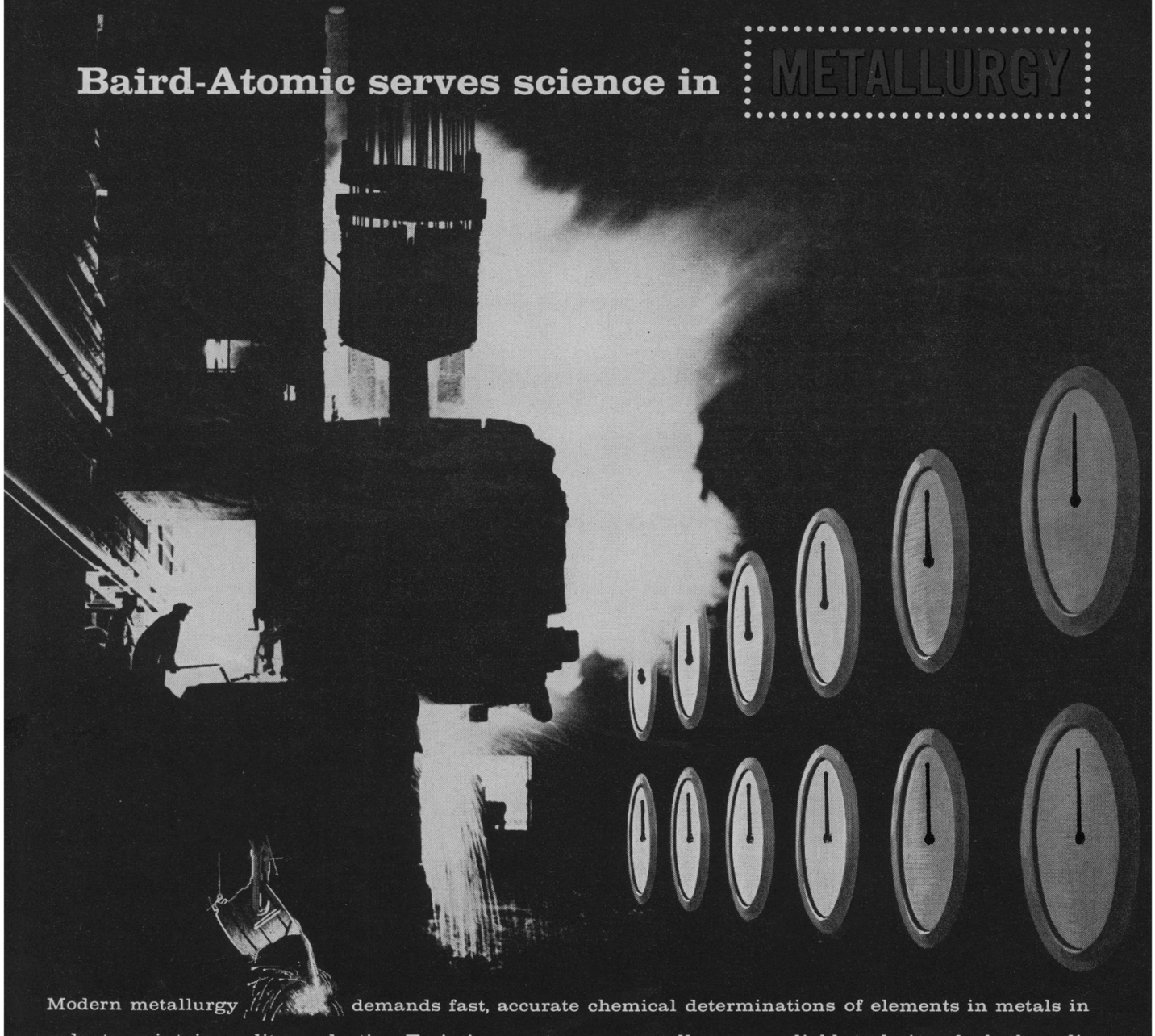
Baird-Atomic serves science in METALLURGY



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ADVANCED OPTICS AND ELECTRONICS...SERVING SCIENCE

11 August 1961, Volume 134, Number 3476 **SCIENCE**

Cover Surface turbulence generated by a grid agitator in a column of water. Those fluid particles possessing sufficient energy to overcome surface tension of the water break through the surface as shown. These breaking waves entrain air into the water and turbulent eddies then diffuse the air bubbles throughout the water column (scale: about 1.1:1). See page 392. [J. E. Flack, University of Colorado, Boulder]

11 August 1961, Volume 134, Number 3476 **SCIENCE**

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The Jinni in the Bottle

J. R. Wiggins, editor of the Washington *Post and Times Herald*, has been asking some of his scientist friends: If you could put the jinni back into the bottle, would you do it? Would you, if you had the choice, undo the work that led to the release of atomic energy? The question is not historical, for obviously the past cannot be undone. Neither is it a strictly scientific question, for if Otto Hahn, Lise Meitner, Enrico Fermi, and their collaborators had not released the atomic jinni, others would have. The point of the question is its social significance, not only for atomic energy itself, but also as a forewarning of problems that may lie ahead. Consider the moral, social, and political dilemmas that would follow upon ability to control the weather on a world-wide scale, to control genetic material, or to control human behavior.

Warren Weaver posed essentially the same question, in a somewhat more manageable form, in asking C. P. Snow, after his address at the 1960 AAAS annual meeting: If a scientist can see with reasonable clarity that continuing a particular line of research is likely to produce information that might be turned to evil ends, should he continue, or should he stop? When phrased in this way, the question poses a personal choice, but only a personal one. A particular scientist can avoid personal responsibility for findings that may be used for evil purposes. But he cannot prevent those findings from being made. If he stops, someone else will continue.

Among the several answers made to these questions is the statement that the scientist plays two roles, one as scientist and the other as citizen, and that he can and should keep the two roles separate. The distinction goes beyond saying that scientists should be concerned with the social implications of their work to say that the scientist, acting as a scientist, can press on wherever and as far as his curiosity and ability lead and permit, and that the same person, now acting as a citizen, can forget his scientific interests in helping to make decisions concerning science and its applications and its control. This is a comforting doctrine, but is it any more realistic than to expect the scientist to open all the bottles to see what they contain while the same person, as citizen, leaves firmly stoppered any that contains an ugly jinni?

Quite aside from the impossibility of undoing the past, and quite aside from the impossibility of preventing others from doing what a particular person refrains from doing, can we expect the scientist—not an idealized abstraction but the human being in the next office—to differentiate his role as a scientist from his role as a citizen? We do not expect the clergyman to forget his cloth when he goes to vote. Nor do we ask the member of another profession to stop and ask himself: Am I acting as a member of my profession or as a citizen of my country? What can we fairly ask of a scientist?

Would you put the jinni back into the bottle if you could? The question can start a lively discussion. It can also lead to a perplexing consideration of whether or not the scientist can separate his roles.
—D.W.

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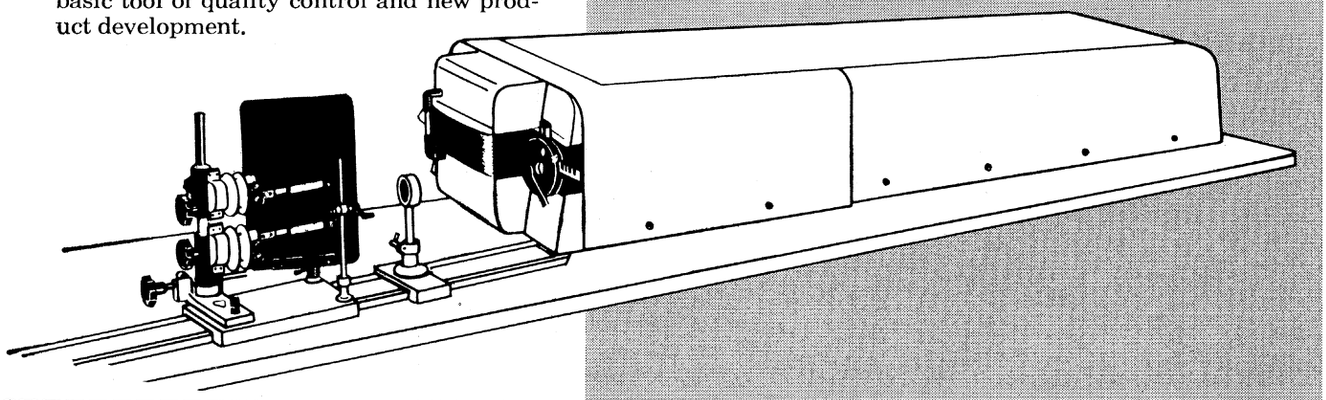

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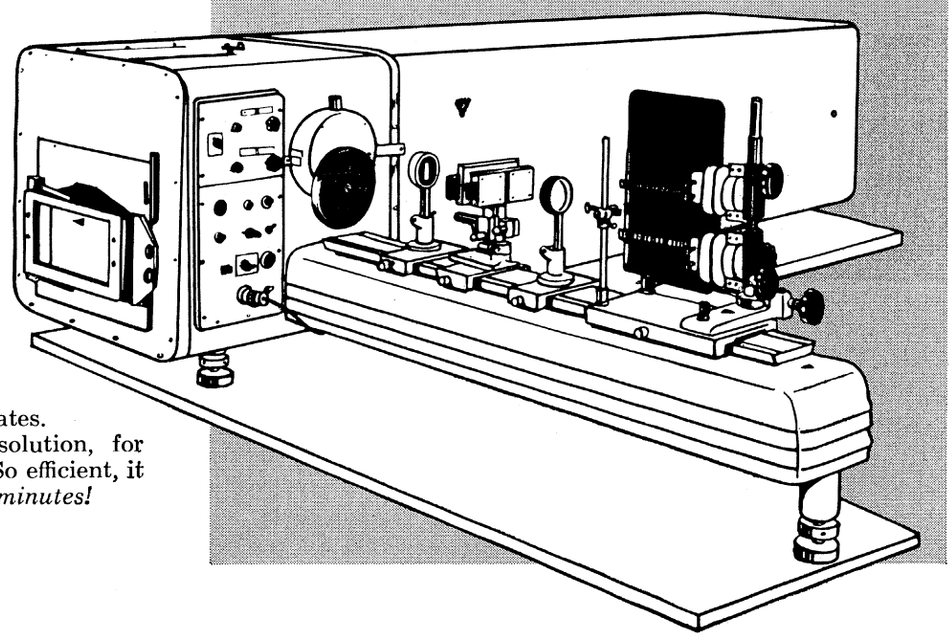

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128th AAAS MEETING
Denver, 26–31 December 1961

The hotels for the AAAS Denver meeting have established **special, low rates** and have reserved appropriately large blocks of rooms for this meeting. Thus everyone making room reservations for the AAAS meeting is assured substantial savings.

The list of hotels and the reservation coupons below are for your convenience in making your hotel reservation in Denver. Please send your application, *not* to any hotel directly, but to the AAAS Housing Bureau in Denver and thereby avoid delay and confusion. The experienced Housing Bureau will make assignments promptly; a confirmation will be sent you in two weeks or less.

If requested, the hotels will add a comfortable rollaway bed to any room, at $3.00 per night. Mail your application now to secure your first choice of desired accommodations. All requests for reservations must give a definite date and estimated hour of arrival, and also probable date of departure.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

For a list of the headquarters of each participating society and section, see page 197, *Science*, 21 July. The Hilton is the AAAS headquarters hotel.

Rates for Rooms with Bath*

Hotel	Single for one	Double for one	Double for two	Twin Beds for one	Twin Beds for two	Studio Twins	Suites
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Brown Palace	8.00	9.00	13.00	$10.00	15.00		24.00 to 65.00
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Please reserve the following accommodations for the 128th Meeting of the AAAS in Denver, 26–31 December 1961:

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NAME .....
(Individual requesting reservation) (Please print or type)

ADDRESS .....
(Street) (City and Zone) (State)

Mail this now to the Housing Bureau. **Rooms will be assigned and confirmed in order of receipt of reservation.**

New Products

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither Science *nor the writer assumes responsibility for the accuracy of the information. All inquiries concerning items listed should be addressed to the manufacturer. Include the department number in your inquiry.*

Pulse height analyzers, models 402 and 404, are 400-channel instruments capable of accepting two and four independent inputs, respectively. Count capacity per channel is 10^5 in both models with 10^6 count capacity optionally available. Each input has its own amplifier and associated gain control. Input pulse polarity must be negative and can cover the range of 0 to 50 mv. The entire channel capacity can be used for a single input if desired. A common analog-to-digital converter is utilized for all inputs. Should two or more inputs arrive simultaneously, all information is rejected. The analyzers use magnetic-core memories with data stored in parallel binary-coded decimal form, thus avoiding the need for an auxiliary binary-to-decimal decoder. Memory packages are made up of either 20 or 24 planes (corresponding to 10^5 or 10^6 counts per channel) with 400 cores mounted on each plane.

The pulse amplitude spectrum is displayed as it is being accumulated on a built-in cathode-ray oscilloscope. After accumulation, the display can be presented on either a log or linear basis. On log display, the vertical scale covers 5 decades. On linear display, full scale can be switched from 100 to 100,000 counts in four steps. Horizontal expansion is also provided. Alternate groups of ten channels are intensified for identification. Spectra in 100- or 200-channel subgroups may be overlapped. Provision is made for a variety of permanent-record readouts. The complete instruments occupy 1 ft^3 and weigh 20 lb. (Technical Measurement Corp., Dept. Sci-265, 441 Washington Ave., North Haven, Conn.)

Temperature integrator designed to record storage conditions of frozen food operates on electrochemical principles. The device is about the size and shape of a cigarette. To start its action, the indicator is squeezed to break a capsule of solution inside. The solution connects two dissimilar metal electrodes allowing the electrochemical reaction to start. Progress of the reaction is indicated by change of color of an indicator paper. The change, from yellow to red, progresses from one electrode to the other. In the present device, the red zone moves the full length of the scale in about 20 days at 20°F, 2 mo at 15°F, 6 mo at 10°F, and in more than 1 yr at 0°F. At 25°F the indicator will travel the full scale in a couple of days. (Minneapolis-Honeywell Regulator Co., Dept. Sci-276, 2747 4th Ave. S., Minneapolis 8, Minn.)

Event programmer can schedule up to eight separate events to occur at time intervals which are from 100 msec to 5 sec apart. Provision is made for remote starts and emergency reset is possible at any time. Each time interval is individually set with accuracy said to be ±5 percent of dial setting. (Atlantic Research Corp., Dept. Sci-278, Alexandria, Va.)

Reference junction box accommodates as many as 51 pairs of thermocouple wires in addition to the pair that is used to monitor the box temperature. Junctions are made by using tapered plastic sleeves that wedge each thermocouple wire into a separate heat-sink socket. The wires are joined directly to copper within the heat sink. Junction temperature is controlled at 150°F. (Research Incorporated, Dept. Sci268, P.O. Box 6164, Minneapolis 24, Minn.)

Servo analyzer is available in three models covering the frequency ranges 0.1 to 100 cy/sec, 0.01 to 100 cy/sec, and 0.001 to 100 cy/sec, with sine-wave or square-wave modulated or unmodulated output. The analyzers provide direct reading phase and amplitude measurements. An internal carrier with 20-watt output is provided to operate servo-system components. The unit also operates from an external carrier of 45 to 4600 cy/sec; special provision can be made for carrier and modulation frequencies up to 20 kcy/sec. Accuracies are said to be: amplitude, ±2 percent of full scale; frequency, ±2 percent of decade range; phase, ±1 deg. (Remanco Inc., Dept. Sci271, 1805 Colorado Ave., Santa Monica, Calif.)

Digital module (Fig. 1) is based on 4⅜- by 4½-in. circuit cards. Each card contains four transistorized circuits that can be connected as flip flops, one shots, and logic gates. Cards can be interconnected to form counters, shift

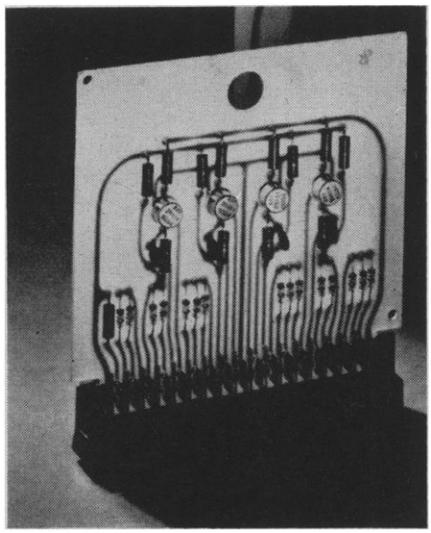

Fig. 1. Digital module.

registers, arithmetic units, or other logical units. Each transistor output can drive ten inputs at rates from 0 to 200 kcy/sec; standard levels are 0 and −12 volts. Compatible system elements available include clock, relay driver, card cage, and power supply. (Computer Logic Corp., Dept. Sci248, 11800 W. Olympic Blvd., Los Angeles 64 Calif.)

A pilot-size **molecular still** (Fig. 2) has three complete distillation units coupled in series. The units are capable of acting as preheaters, degassers, and strippers, as well as distilling the major compound. Automatic operation is provided by recorders monitoring each control factor. Molecular weight range is 250 to 4000; capacity is 10 to 300 lb/hr. (Arthur F. Smith, Inc., Dept. Sci252, 311 Alexander St., Rochester 4, N.Y.)

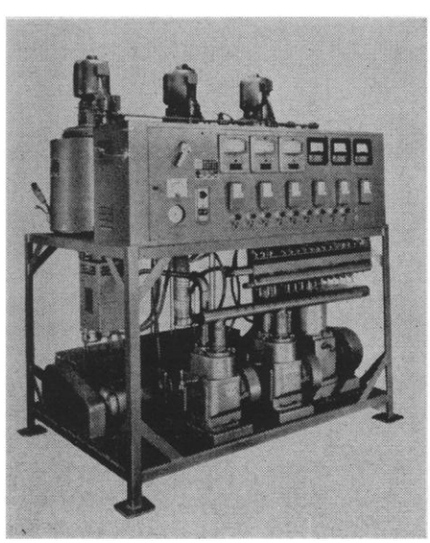

Fig. 2. Molecular still.

Microwave phase meter is a direct-reading instrument for the frequency range 300 to 4000 Mcy/sec. Operation of the instrument is based on square-law response to a standing-wave pattern, the pattern being the resultant of the two signals whose relative phase is being measured. Resolution is said to be 0.1° at the microwave frequency. An output is provided for use as an error signal for automatic phase control. The instrument can be adapted for swept-frequency operation with automatic recording. (Wiltron Co., Dept. Sci274, 717 Loma Verde Ave., Palo Alto, Calif.)

Rubidium spectral lamp is a high-intensity light source for research with optically pumped resonance systems. The lamp consists of a precise amount of alkali metal and noble gas in a transparent bulb mounted in the inductive winding of a free-running, 100-Mcy/sec excitation oscillator. The lamp provides a high-photon flux at a high signal-to-noise ratio. The only noise present is said to be substantially the fundamental limiting optical photon shot noise of the discharge. Potassium, cesium, sodium, and mercury discharge bulbs are also available on special request. (Varian Associates, Dept. Sci257, 611 Hansen Way, Palo Alto, Calif.)

Coil tester measures the number of turns on coils without a core and on coils wound on open ferromagnetic cores protruding from the coil. Accuracy is said to be ±0.1 percent. The device detects short-circuited turns equal to or larger than one turn of No. 25 AWG copper wire and checks on the correct amount of short-circuited layers used for time delay on relays. The number of turns is measured by comparing the voltages induced by a common flux in the coil to be measured and in a reference coil. (Maxim Controls Co., Dept. Sci277, 4734 North Albina Ave., Portland, Ore.)

Infrared spectrophotometer scans the spectrum from 2.5 to 15 μ in 3 min. A full 12-min scan is available at the throw of a switch. The instrument is a double-beam spectrophotometer with a sodium chloride prism. Spectra are recorded on notebook-size paper. (Perkin-Elmer Corp., Dept. Sci262, Norwalk, Conn.)

JOSHUA STERN
National Bureau of Standards, Washington, D.C.

Meetings

Forthcoming Events

August

30–1. Bionics Symp., 2nd annual, Ithaca, N.Y. (R. Earle, G.E. Advanced Electronics Center, Ithaca)

30–1. Semiconductor Conf., 3rd annual, Los Angeles, Calif. (W. V. Wright, Electro-Optical Systems, Inc., 125 N. Vinedo Ave., Pasadena, Calif.)

30–2. American Sociological Assoc., St. Louis, Mo. (T. Parsons, Dept. of Social Relations, Harvard Univ., Cambridge, Mass.)

30–2. Experimental Research on Shell Structures, colloquium, Delft, Netherlands. (A. L. Bouma, Dept. of Civil Engineering, Technological Univ., Delft)

30–5. Mental Health, 6th intern. congr., Paris, France. (Miss E. M. Thornton, World Federation for Mental Health, 19 Manchester St., London, W.1, England)

30–6. British Assoc. for the Advancement of Science, 123rd meeting, Norwich, England. (Secretary, BAAS, 18 Adam St., London, W.C.2, England)

31–2. Exfoliative Cytology, intern. congr., Vienna, Austria. (Office of the Secretary of the Congress, 666 Elm St., Buffalo 3, N.Y.)

31–2. Gynaecological Cytology, 1st intern. congr., Vienna, Austria. (R. M. Graham, Roswell Park Memorial Inst., 666 Elm St., Buffalo 3, N.Y.)

31–4. Preventive and Social Medicine, meeting, Evian, France. (Societé Française de Medecine Preventive et Sociale, 1 rue de Courcelles, Paris 8, France)

31–6. American Psychological Assoc., 69th annual, New York, N.Y. (J. G. Darley, 1333 16th St., NW, Washington 6)

September

1–5. Danube Research, intern. symp., Budapest, Hungary. (Biological Sciences Group, Hungarian Acad. of Sciences, Roosevelt Tèr. 9, Budapest V)

1–9. Topology and Its Methods in Other Mathematical Disciplines, symp., Prague, Czechoslovakia. (Organizing Committee, Ke Karlovu 3, Prague 2)

1–10. International Pharmaceutical Students' Federation, 7th congr., Munich, Germany. (U. Peto, 10 Groffstr., Munich 19)

2–7. International Assoc. for Quaternary Research, Warsaw, Poland. (R. Galon, Secretary General, INQUA, Geographical Inst. Univ., Torun, Poland)

2–9. International Soc. of Surgery, 19th congr., Dublin, Ireland. (T. C. J. O'Connell, 35 Fitzwilliam Pl., Dublin)

3–7. International Assoc. for Hydraulic Research, 9th congr., Belgrade, Yugoslavia. (H. J. Schoemaker, Waterloopkundig Laboratorium, Raam 61, Delft, Netherlands)

3–8. American Chemical Soc., 140th meeting, Chicago, Ill. (A. T. Windstead, National Meetings Dept., ACS, 1155 16 St., NW, Washington 6)

3–9. International Federation of Gynaecology and Obstetrics, 3rd world congr., Vienna, Austria. (V. Grünberger, Medizinische Akademie, Alserstrasse 4, Vienna 9)

3–10. Inter-American Congr. of Radiology, 7th, São Paulo, Brazil. (W. Bomfim-Pontes, Rua Cesario Motta 112, São Paulo)

4. World Federation for Mental Health, 14th annual, Paris, France. (WFMH, 19 Manchester St., London, W. 1, England)

4–6. International Assoc. for Shell Structures, colloquium, Brussels, Belgium. (Prof. Dutron, 127 Avenue Adolphe Buyl, Brussels 5)

4–6. International Symp. on the Earth Storm, Kyoto, Japan. (T. Nagata, Science Council of Japan, Ueno Park, Tokyo)

4–7. Neuropathology, 4th intern. congr., Munich, Germany. (W. Haymaker, Armed Forces Inst. of Pathology, Walter Reed Army Medical Center, Washington 25)

4–7. Rheumatology, 10th intern. congr., Rome, Italy. (C. B. Ballabio, Clinica Medica Generale, Via F. Sforza 35, Milan, Italy)

4–8. Low Energy Nuclear Physics, intern. conf., Manchester, England. (L. J. B. Goldfarb, Physics Dept., Univ. of Manchester, Manchester)

4–8. Pharmaceutical Sciences, 21st intern., congr., Pisa, Italy. (Intern. Pharmaceutical Federation, 11 Alexanderstraat, The Hague, Netherlands)