

Strip Chart showing stability and sensitivity of prototype 602B/X EMR. Sample: Varian 0.00033% pitch standard; effective cavity power, 7 milliwatts; 3 second integration time; noise equivalent to  $5 \times 10^{10}$  spins/gauss. Rm. temp. Signal to noise, 40:1;  $f = 9.49\text{gc}$ ;

## New EMR Spectrometers Advance Standards in Sensitivity & Resolution

Strand Labs announces that its new B-series of X-band electron magnetic resonance spectrometers set a new standard in EMR sensitivity and resolution. Using a new development in microwave detectors, these systems, with a high-resolution 6 kc magnetic field modulation, offer demonstrated noise figures of 15 db at 1 milliwatt sample cavity power level. This figure corresponds to a minimum detectable number of spins of  $2 \times 10^{11}$  spins/gauss of line width when the sample is observed at room temperature in a cavity with unloaded Q of 25,000 (which is standard in our X-band systems) and with an integration time of 3 seconds.

These proven systems in Model 601 and Model 602 configurations are available for use with microwave power at the cavity of up to 200 milliwatts. Note that these B-series systems may be compared in sensitivity with existing units by scaling the sensitivity,  $2 \times 10^{11}$  spins/gauss, inversely proportional to both the square root of the microwave power and the Q of the sample cavity. In these systems, however, the use of the full 200 milliwatts of power may not increase the sensitivity by another factor of 14, since saturation of the sample tends to limit the increase in sensitivity with power. It can only be said that, in many cases, a sensitivity of better than  $5 \times 10^{10}$  spins/gauss is achievable in these systems with more power.

This sensitivity increase corresponds approximately to a reduction by 15 db in noise figure of Strand Labs A-series systems. This is accomplished by using a new type of semiconductor diode selected for low 1/f noise and for match in our detector mounts. We consider the B-series the ultimate in EMR apparatus since, though conceivably a further 10 db noise figure may be possible with maser amplifiers, this further reduction in noise figure yields only a factor of 3.1 decrease in the minimum number of detectable spins. The high Q of our sample cavity gave the Strand Labs A-series EMRs an 11 db increase in sensitivity over systems with sample cavity Q of 7,000. Now, with a detector noise figure within a few db of that attainable at any signal frequency, 100 kc or 30 mc, and with our ultra-stabilized klystron sources, Strand Labs offers a B-series EMR system with highest resolution and unsurpassed noise figure. The high Q sample cavity yields a bonus sensitivity of up to 11 db.

For the K (23 - 25gc),  $K_a$  (34 - 36 gc) and E (67 - 73 gc)-band EMR, Strand Labs expects similar increases in sensitivity, even though they are remarkably good at present. For example, the K and  $K_a$  units have been demonstrating sensitivities (based on molecular oxygen as a standard of better than  $5 \times 10^{10}$  spins/gauss of line width).

If you have a requirement for an electron magnetic resonance spectrometer that demands the limit of what is currently achievable at X, K,  $K_a$  or E-band, or if you already own a Strand Labs EMR and would like to have it modernized or given a maintenance check up, write the Technical Director at Strand Labs.

## Zoology: Sixteenth International Congress

The 16th International Congress of Zoology took place in Washington, D.C., under the auspices of the National Academy of Sciences, 20-27 August 1963. More than 2400 registrants made this the largest in the long history of these congresses. Of the more than 60 countries represented, all the major nations, except Communist China, were included.

The objective of the congress, as symbolized in its emblem the Phoenix, was the reunion of zoology from its separate specialities. Plenary symposia covered the full spectrum from the molecular level to that of animal behavior. Speakers included Benzer, Meselson, and Spiegelman on genetic continuity; de Robertis, Ingram, and Lehninger on cell biology; Oppenheimer, Markert, and Abercrombie on development; Rendel, Lewontin, Mayr, and Kurten on evolution; Prosser, B. Schmidt-Nielsen, and G. S. Carter on phylogeny; and Bullock, Thorpe, and Tinbergen on behavior. Thirty specialized symposia were held; 500 contributed papers and demonstrations were presented.

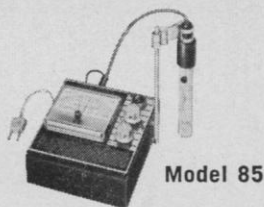
The Permanent Committee for the International Congresses of Zoology, under the chairmanship of J. G. Baer (Neuchatel) requested, and obtained from the final plenary session "the necessary authority: (i) To include all the members of the Comité Permanent in the Board of the Division of Zoology of IUBS; (ii) to recognize the Board of the Division of Zoology of IUBS as the international body of zoologists responsible for maintaining the continuity of Zoological Congresses; (iii) to consider that henceforth the role of the Comité Permanent would be assumed by the Board of the Division of Zoology of IUBS on a much broader basis than before, and that it would be undesirable to maintain two similar international bodies; and (iv) to authorize the Comité Permanent to accept the proposal put before it by the Division of Zoology of IUBS, pending that the reorganization of this Division be adopted by the General Assembly of IUBS in 1964."

The plenary session also passed a resolution recognizing the singular importance of the *Zoological Record* to zoologists all over the world. The Congress expressed gratitude for the devoted and almost entirely donated work which makes the *Zoological Record*

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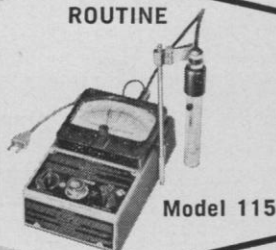
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possible and "strongly urged that every effort be made to continue publication of this unique bibliographic instrument."

A third resolution commended "the International Council of Scientific Unions for the inauguration of an International Biological Program which stresses the biological basis of productivity and human welfare" and urged zoologists individually and through their societies to support the program.

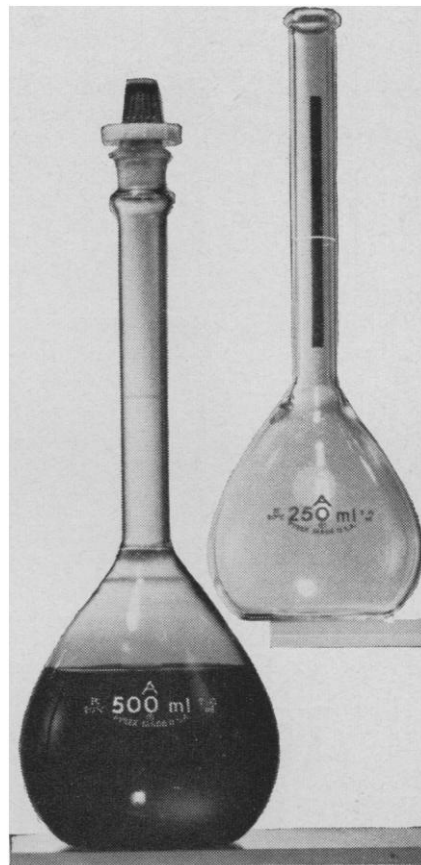
The plenary session ratified the new constitution of the International Commission on Zoological Nomenclature and changes involving articles 11(b), 11(d), 29(a), and 31 of the code. The election of the following members to the Commission was also ratified: do Amaral, Vokes, Stoll, Holthuis, Miller, Mayr, Ride, Krauss, Hubbs, Sabrosky, and Forest, and, subject to his agreement to serve, G. G. Simpson.

The officers of the congress were: president, Alfred S. Romer; vice presidents, Umberto D'Ancona (Italy); Jean G. Baer (Switzerland); Enrique Beltran (Mexico); N. John Berrill (Canada); L. C. Birch (Australia); P-P. Grassé (France); Sven Horstadius (Sweden); Libbie H. Hyman (U.S.); H. J. Muller (U.S.); Ye. N. Pavlovskii (U.S.S.R.); Eduardo de Robertis (Argentina); Oswain W. Richards (United Kingdom); B. R. Seshachar (India); E. J. Slijper (Netherlands); George G. Simpson (U.S.); Nikolaas Tinbergen (United Kingdom); Tohru Uchida (Japan); and C. M. Yonge (United Kingdom); secretary-general, Gairdner Moment; program chairman, John Moore; treasurer, Alexander Wetmore; and finance chairman, Gerard Piel.

Baer expressed the sincere hope of the permanent committee that the tentative invitation for the 17th Congress to meet in Delhi in 1968 will become firm and will be accepted. He also thanked all the various American committees which had worked so hard to achieve this outstanding Congress.

The *Daily Phoenix*, edited by William T. Kabisch of the AAAS staff, recorded the day-by-day progress of the congress and even reported a field sighting of the Phoenix.

Volumes 1-5 of the proceedings may be bought at \$1.25 per volume by writing the Printing and Publishing office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C. 20418. Each volume contains about 300 pages. Volumes 1 and 2 consist of the contributed papers, and volumes 3 and 4 are the specialized



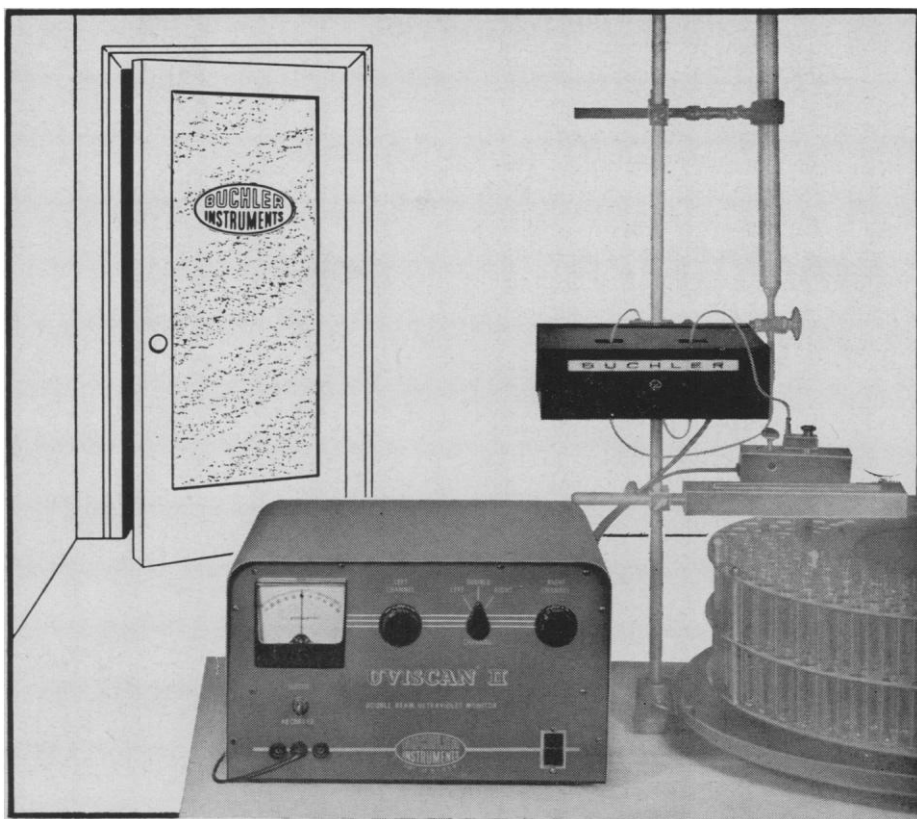
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symposia. Volume 5 contains the list of registrants and a general account of the congress. Volume 6 will contain the six scientific plenary sessions and will be published by the Natural History Press, Central Park West at 79th Street, New York, New York.

GAIRDNER B. MOMENT  
Goucher College, Baltimore, Maryland

### Paleontology

Advances in paleontological research and the republication of classic contributions to the field were reported at a meeting of the Paleontological Research Institution in Ithaca, New York, on 12 October.

The subject matter announced by K. V. W. Palmer, director of the institution, as having been published or in press in the serial publications of the institution (*Bulletins of American Paleontology* and *Palaeontographica Americana*) reflects a continuing interest in the problems of tertiary stratigraphy which first attracted the founder, Gilbert Dennison Harris. However, in recent years the institution has embarked on a program of republishing important references no longer readily obtainable. While some will be reprinted in their original form, such as Conrad's *Fossil Shells of the Tertiary Formation* (available in 1964), others are being reevaluated and modernized, such as K. V. W. Palmer's *Illustrations and Descriptions of Type Specimens of Marine Mollusca Described by P. P. Carpenter from the West Coast of Mexico and Panama* (in press).

The institution also compiles data covering wide geographic areas and a wide range of organisms. Research workers will soon have available the *Catalogue of Paleocene Mollusca of the Southern and Eastern U.S.A.* by K. V. W. Palmer and D. Brann, and *Late Cenozoic Pelecypods from Northern Venezuela* by N. E. Weisbord (both in press). Publications on organisms, from Foraminifera through Lycopods, indicate the breadth of the institution's activities in all areas of paleontology. Palmer noted that the total volume of publications had doubled during the last 3 years to sustain this activity. The number of manuscripts at hand point to further increases in volume in the near future.

In addition to activities pertinent to publication, the institution maintains and processes large collections of type