SCIENCE

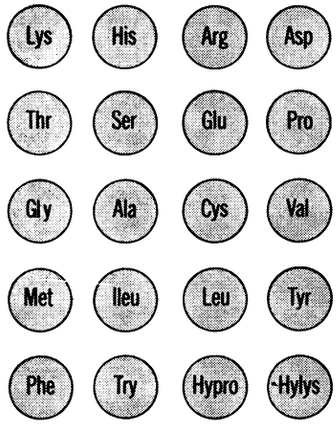
26 January 1962

Vol. 135, No. 3500

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

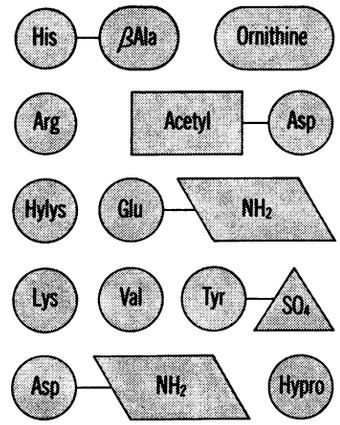
Amino acid analysis

... 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.



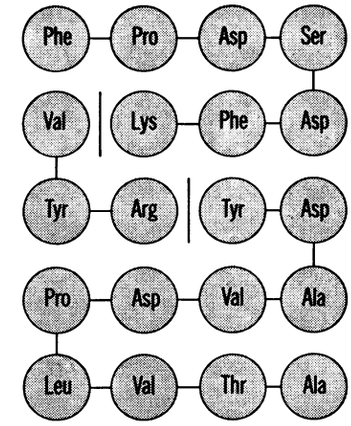
Amino acid isolation

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



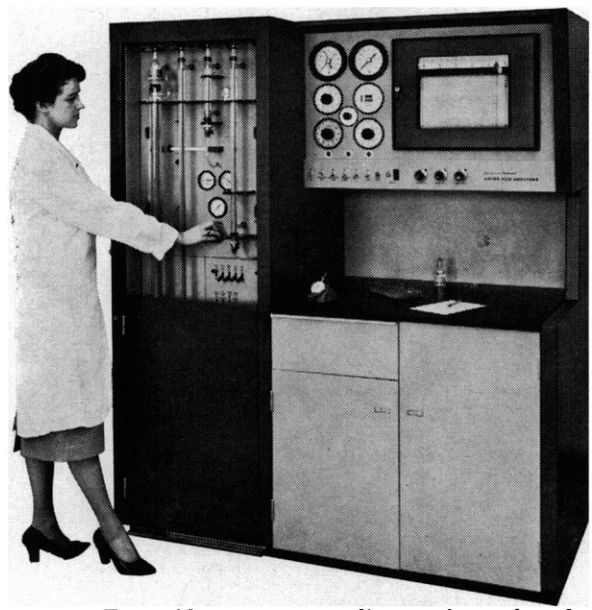
Peptide isolation

... 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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The Making of a Magnet. Bell scientists test new superconducting electromagnet, the small cylindrical object being removed from helium bath at minus 450 degrees F. An early experimental design produced a field strength over 65,000 gauss.

OUT OF SOLID STATE SCIENCE COMES A POWERFUL NEW MAGNET

Bell Telephone Laboratories' creation of a powerful superconducting electromagnet once again illustrates the role of materials research in the advancement of communications.

It has long been known that certain materials called superconductors have a zero electrical resistance at temperatures near absolute zero. A solenoid of superconductive wire carrying a large current should be capable of producing an extremely powerful magnetic field without the bulky power equipment that is needed for conventional electromagnets.

A formidable obstacle blocked the way, however. The strong magnetic field tended to destroy the wire's superconductivity.

Bell Laboratories scientists studying superconductors—as part of their endless search for new materials for communications—were led to the discovery of a number of alloys and compounds having exceptional superconductive properties. One of these materials, a compound of niobium and tin, was found to possess a startling ability to retain its superconductivity in intense magnetic fields of over 100,000 gauss. Bell scientists went on to show how the brittle, intractable material could be made into a wire and hence wound to make an extremely powerful electromagnet.

By finding a low-cost way to create enormously powerful magnetic fields, Bell scientists have brought closer new applications of magnetism in communications. Intense magnetic fields provide an invaluable tool in research, and offer an attractive means for containing hot plasma in thermonuclear experiments.

The new magnet is another example of how Bell Laboratories research not only works to improve Bell System communications but also benefits science on a broad front.

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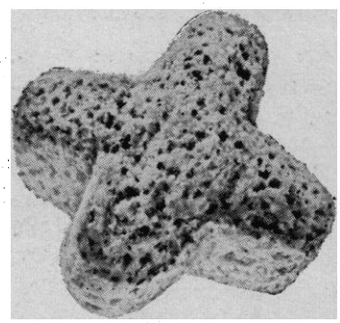
SCIENCE

Cover

Head of the American chameleon, *Anolis carolinensis* (about × 7½). The parietal eye appears as a dark spot in the midline of the snout, just behind the lateral eye. See page 316. [William H. Miller and Myron L. Wolbarsht, Rockefeller Institute, New York]

The ROCKLAND FORUM

ANNOUNCING... NEW ROCKLAND LABORATORY PRIMATE DIET

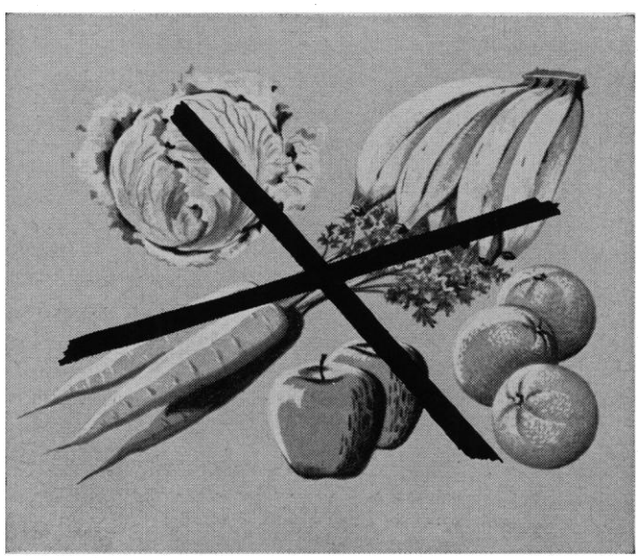


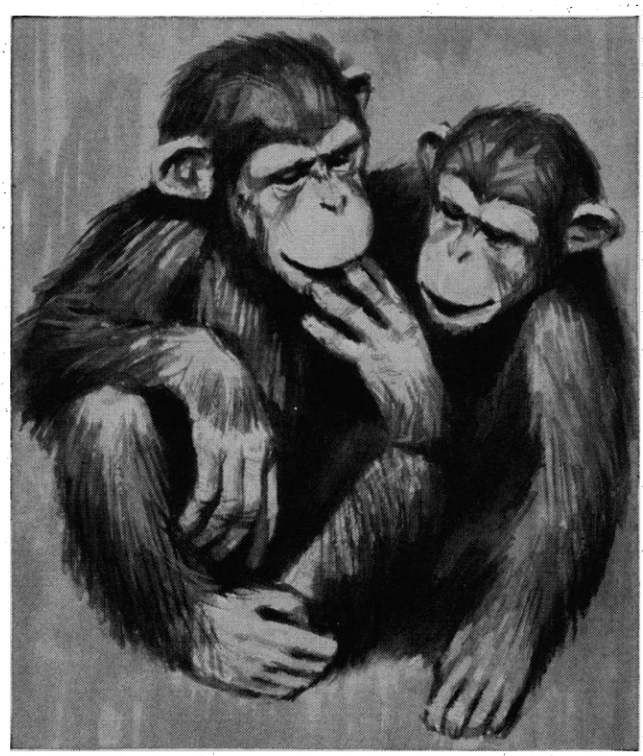
new star shape

A "New Star" in Primate Nutrition... feeding economy... palatability... process and shape

Investigators agree that laboratory primates, especially during the process of their acclimation, exhibit their natural traits and characteristics in their eating habits and become suspicious, choosy and selective eaters. Every feeding, especially during this initial period, becomes a challenge for the investigator.

To meet this challenge and insure ready response at feeding time, Staley research has developed NEW ROCKLAND Laboratory Primate Diet—a *highly palatable, nutritionally complete* formulation. No supplementation of fruits and vegetables as sources of Vitamin C is necessary when fed within the dating period indicated on the tag affixed to the bag.





Another *extremely valuable* advantage incorporated into this product is its shape. Best described as STAR SHAPE, its measurements between points are 2 inches —with a length of 1½ inches and a thickness of ¾ inch.

After considerable feed testing and research, the new star shape was selected over several other physical forms. The star shape and proportions of Rockland Laboratory Primate Diet not only provide the primates with greater biting surface, but also affect feeding economies as food will not fall through the cage floor.

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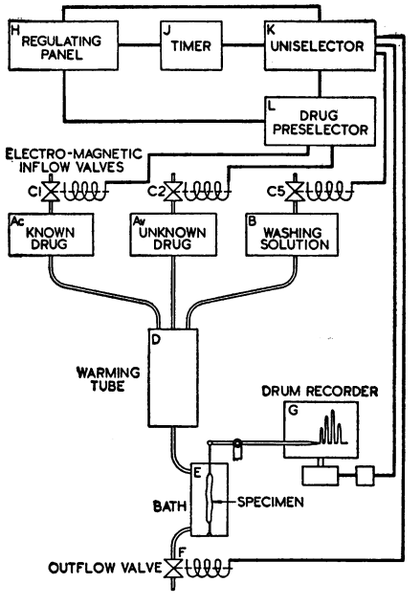
Instruments and Applications

Automated quantitative measurement of drug activity

In such applications as testing of anti-spasmodic drugs, histamine assays, potentiation and antagonist experiments, etc., the speed, accuracy and convenience of set-up and measurement procedures can be improved by use of the Casella Automatic Biological Assay Apparatus.

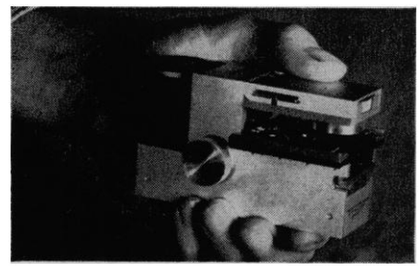
The apparatus controls the flow of drug and washing solutions into and out of the isolated organ bath, using electro-magnetic valves.



The drug and washing solutions are contained in reservoirs Av, Ac and B respectively. When one of the air-inlets is opened by its valve C, the solution flows via the warming tube D into the jacketed isolated organ bath E — which is emptied by another electro-magnetic valve F. The contractions of the specimen are traced on the drum of a standard type of variable speed recorder G.

The cycle has been divided into several stages. The time required for each of these operations is independently variable over a very wide range. This is done by adjusting those controls on panel H which regulate the intervals between the pulses sent out by timer J to the uniselector switching device K. The order in which the drugs are added is decided by the position in which plugs are placed in the preselector L.

The McArthur Microscope



The McArthur Microscope shown was originally designed for malaria diagnosis and control work in the field in Southeast Asia. It can be quite easily carried in a coat pocket, but retains all the performance advantages of a full size instrument. A full range of achromatic and fluorite objectives is available as well as dark ground accessories. Illumination can be by mirror or by a battery or transformer operated built-in light source.

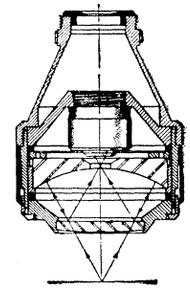
Phase contrast examination of tissue cultures in test tubes

Adequate optical examination of the living cell sheet while in the test tube (in which tissue cultures for routine virology are often and most conveniently grown) has not previously been possible — chiefly because it has not been possible to apply the phase contrast method. However, this is now feasible with the McCarthy Phase Apparatus, supplied as an accessory with the Cooke M15 microscopes, designed to give a phase contrast image (up to 150X-200X) of tissue cultures in a round 6" x 5/8" (150mm x 16mm) test tube.

In the McCarthy system provision is made for correction of astigmatism caused by the test tube and a special condenser system, compensated for the tube's cylinder effect, projects the substage phase annulus in the plane of the object.

High power microscope objectives with long working distances

Under unusual observation conditions and for some work involving the techniques of micro-manipulation, it would be advantageous to use "high dry" objectives but with working distances many times those normally obtained. Cooke-A.E.I. special objectives with working distances more



than 15 times conventional values are sometimes used. Drawing shows the general construction, involving a mirror system which projects object image to a conventional microscope objective mounted behind. Working distance of both 20X and 40X objectives is 12.8mm, as contrasted with the normal working distance of approximately 0.71mm.

Numerical apertures are slightly reduced (to N.A. 0.57 in the case of a 40X achromat) and there is some loss of light inherent in the design. Excellent image quality is achieved, however, if cover glasses are close to the 0.18mm thickness for which the system is adjusted. Because of the mirror system, the objectives cannot be used on metallurgical specimens.

Letters

Reservoir of Good Will

The present international tensions are so serious and the danger of an almost unimaginable catastrophe is so threatening that attempts to find a solution for it should not be left only in the hands of political leaders, however competent they may be. The crisis touches everyone so closely that no one should fail to have a deep and personal concern in keeping it from culminating in universal destruction. Only a surge of public opinion, drawing on the reservoir of good will that certainly exists on both sides of the iron curtain, will have much chance of dispelling the clouds of hopelessness, frustration, and fear in which we live today.

To achieve this end I believe that men of science everywhere can make a notable contribution. They are regarded with great respect in the Soviet Union, not only by those who direct affairs but by the people in general. In Western countries, and particularly in our own, scientists in the last few years have enjoyed a substantial increase in public confidence and esteem. They are listened to, here and abroad, more than ever before and consequently have an unparalleled opportunity and responsibility to lead public opinion. If the men of science from both East and West, could come together for a friendly conference on the problems, both scientific and political, that both groups face, the outcome, I am sure, would be a great gain in good will on both sides. To plan such a gathering on a grand scale is obviously out of the question, but the recent conference at Stowe made clear the possibilities in such face-to-face discussions. It was disappointing, to be sure, that this conference could come to no agreement as to how some of our major problems could be solved, but the absolute necessity of avoiding atomic warfare was unanimously voiced.

To arrange many personal discussions of this sort as a means of reaching agreement and stimulating good will is impracticable, but I should like to suggest that attempts be made to gain the same ends, so far as possible, by personal communication. If every member of the AAAS, or even one out of every four, could be persuaded to sit down and write to a few of his Soviet friends, or to other Russian scientists with whose work he is familiar, I believe the effect would be a very happy one. These communications, of course, should not be form letters or letters concerned with propaganda, but sincere gestures of friendship and expressions of hope for international understanding and for a peaceful settlement of our various problems. Unless something of this sort is done, and on a rather large scale, we shall be guilty of failing to take advantage of a very great asset that is available to us—the mutual friendship of men of science here and in the Soviet Union and its important possibilities for the formation of public opinion.

EDMUND W. SINNOTT
Yale University,
New Haven, Connecticut

Reprints of Journal Articles

After reading Jack Alan MacWatt's article, "Improving scientific communication" [*Science* **134**, 313 (1961)], in which he suggests that reprints available from the publisher at a reasonable fee could supplement today's journals, I began wondering if his suggestion could also be interpreted in the following way.

Publishers should consider their principal product to be, not the journal, but the reprints of the articles in the journal. The journal and its contained articles would be considered advertisements (possibly financed by page charges) for copies of the individual papers. A subscription to the journal would provide all of the advertisements (the articles). A reader without a subscription could obtain copies of the advertisements (the articles) by buying them from the publishers. The copyright law would, of course, be enforced.

Whether this is a reasonable working method is up to the publishers to say. However, what would happen to the whole system of publishing technical journals if it were discovered that only a few readers were interested in buying a particular article? Would technical publications then be considered as important as they are now considered to be? Or is the use of a technical article by even one person at a later date of almost incalculable value?

HERBERT J. FRIEDMAN
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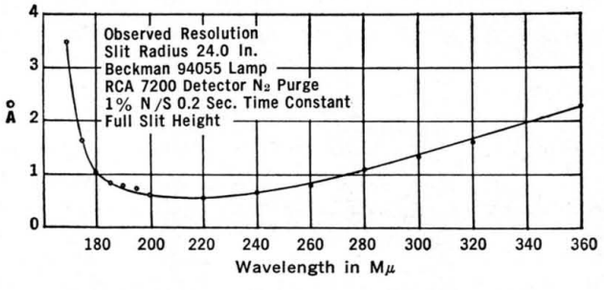

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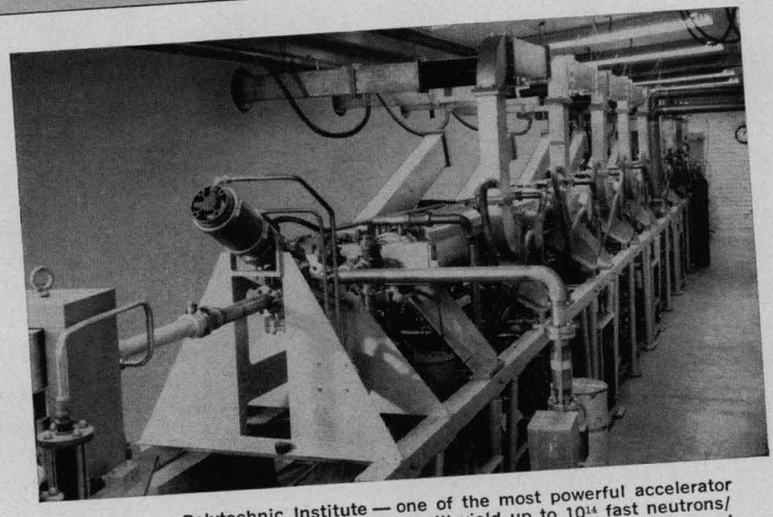


Rensselaer Polytechnic Institute — one of the most powerful accelerator neutron sources ever built, this linac will yield up to 10^{14} fast neutrons/sec, or a thermal flux of 10^{12} neutrons/sec/cm², with peak energy at 77 Mev, and peak pulse current of 800 ma. Primarily for neutron-time-of-flight and nuclear reactor research, the accelerator will also aid RPI's solid-state and radiation effect studies.

High Energy Linacs

Today's rapid advances in particle accelerator technology are particularly illustrated by the microwave linear electron accelerator (linac). Spurred by experimental requirements for more intense bursts of high-energy electrons and neutrons contained within precise limits of time and space, High Voltage Engineering and Applied Radiation Corporation have sustained intensive development of linacs. The result has been consistent improvement in linac reliability, and a series of record-breaking machines for research.

Two research linacs of considerable sophistication are now in operation at Yale University and Rensselaer Polytechnic Institute physics departments. The Yale machine is a five-section L-band accelerator, producing 28 kw of average radiation power and peak energies of 77 Mev. It is being used in a broad physical research program with emphasis on nuclear cross-section investigations. RPI's accelerator is an unusually powerful neutron physics research tool.

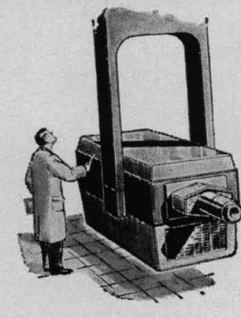
The accelerators of the near-future are exemplified by the machine now being built for the U.S. National Bureau of Standards. This linac, designed to performance specified by the NBS, will produce electron beam peak energies up to 150 Mev. Its 40 kw power output at 100 Mev will be greater than any previously obtained from a linear accelerator and about 100,000 times that obtainable from existing NBS high energy accelerators.

Availability of the intense high energy electron beam — and of secondary radiations such as x-rays, positrons and neutrons — opens up new research areas for NBS scientists. The linac will be used in low temperature chemistry, solid state physics, metallurgical studies, neutron activation analysis, nuclear alignment studies and determination of radiation standards.

Machines of such power were not available previously, and provide the experimenter with many intriguing opportunities.

Applied Radiation

As a powerful source of ionizing radiation, the linac is also a prime candidate for industrial radiation programs where electron penetration above 3 Mev is required. For example, most of the surgical sutures used today (made by Ethicon, Inc., a division of Johnson & Johnson) are electron-beam sterilized in aluminum-foil packages by industrial linacs operating on a two-shift production basis.



Development at High Voltage Engineering and ARCO has led to compact microwave electron accelerators for x-ray inspection and deep-x-ray therapy. High energy x-ray linacs can radiograph through two feet of steel or non-destructively inspect our biggest solid fuel rocket engines. Medical x-ray linacs provide the radiologist with a new precision therapy tool for treating deep-seated malignancies.

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SCIENCE

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"Willful Men"

The Cosmos Club of Washington has been much in the news lately. The first incident to attract national attention was the nomination of President Kennedy for membership and the discovery by an astonished public that he would have to wait his turn for election just like anyone else. Democracy in action! But the publicity of the last two weeks stems from an incident quite different in kind, one that reveals grave flaws in the mode of government of the club.

Unlike many private clubs, the Cosmos Club has no constitutional religious or racial qualifications for membership. Neither wealth nor position in "society" is taken into account for election. On the contrary, the prime requirements are that the candidate shall have done "meritorious original work" in science or the arts, or is "well known to be cultivated" in some field of the arts or sciences, or is "recognized as distinguished in a learned profession or in a public service." More than half of the members are scientists; the rest are lawyers, editors, writers, university presidents, painters, reporters and columnists, government officials, and so on. Admissions are passed on by a 12-man committee, and two adverse votes disqualify a candidate.

In view of the elevated intellectual and cultural aspirations of the club and of the fact that Negro guests are freely admitted, members and nonmembers alike were astonished and dismayed when the admissions committee turned down an apparently well qualified Negro, Carl T. Rowan, for membership. Although it is true that about one-third of all those proposed are rejected, the great majority of the members are reported to believe that racial prejudice was the ruling factor in this case. Mr. Rowan occupies a high position in government (he is Deputy Assistant Secretary of State for Public Affairs and was nominated for membership by his predecessor in that office), is a well-known reporter, and is the author of three books. The reaction to his rejection was immediate: some dozen members, among them John K. Galbraith, who was one of Mr. Kennedy's sponsors for membership, Jerome Wiesner, the President's science adviser, and Howard K. Smith, radio and television news commentator, resigned in protest. Others, no less opposed to the action of the admissions committee, hastily organized to attempt to make sure that no similar action would be taken in the future. An overwhelming majority of the members voted in favor of a declaration that "the exclusion of any person from membership on account of religion, color, race, or national origin is incompatible with the principles of the Cosmos Club." An informal committee polled the ten candidates for the five vacancies on the admissions committee for their opinions; the five who were elected were the five who unequivocally pledged that race would not influence their votes.

By these two actions the Cosmos Club took the first steps toward restoring its lustre as an intellectual institution. But if it is to retain its national status as a place for scientists to meet, it will have to devise a mode of election to membership that will not permit the wishes of the majority to be thwarted by what Woodrow Wilson, a distinguished former member, might have called "a little group of willful men, representing no opinion but their own."—G.DuS.

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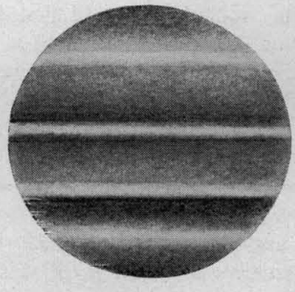

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Meetings

Neurospora

The first *Neurospora* Information Conference was held at the University of California, La Jolla, from 2 to 4 March 1961. It was attended by more than 100 invited participants, from both the United States and Canada, who use *Neurospora* for genetical research. The conference was sponsored by the Division of Biology and Agriculture of the National Academy of Sciences–National Research Council and was supported by the National Science Foundation and the U.S. Atomic Energy Commission. The immediate goal was to provide a forum for informal discussion of problems in the areas of research that are undergoing rapid development. Meetings were held in the auditorium of the Scripps Institute of Oceanography, and the local arrangements were made by D. M. Bonner, chairman of the department of biology.

The conference consisted of a series of informal round-table discussions between the most active investigators in each area. Summaries of the current status of research were given by the chairmen, and informal reports were then presented to stimulate general discussion of the topic by participants.

The session on cytology and ultrastructure, with S. Emerson (California Institute of Technology) as chairman, dealt with the ultrastructure of the vegetative mycelium, as revealed by electron microscopy, and the cell wall structure of ascospores. M. Zalokar (University of California, La Jolla) discussed the layering of intracellular components in centrifuged hyphae. T. Tsuda (Rockefeller Institute) compared the structure of normal hyphae with that of an inositol-requiring mutant. Cytoplasmic components of wild type were contrasted with those of a cytoplasmic mutant, by A. Miller (California Institute of Technology). A. Sussman (University of Michigan) showed that the cell wall of dormant and germinating ascospores consists of three different components. In the concluding report, G. Lester (Worcester Institute) reviewed his work on permeability in relation to cell structure.

Nuclear cytology and cytogenetics were covered in a session chaired by P. St. Lawrence (University of California, Berkeley). In the first half, the mechanism of mitosis and the morphology of somatic chromosomes were discussed by C. Somers (University of Texas), A. Bakerspigel (University of Toronto), and E. S. Dowding and J. Weijer (University of Alberta). In the second half, the elegant cytological studies of B. McClintock (Cold Spring Harbor) and J. Singleton (Purdue) on the different stages of meiosis and the morphology of each of the seven chromosomes during the postmeiotic mitoses were reviewed by McClintock. M. Mitchell (California Institute of Technology) reported on possible abnormalities in the development of asci and on the significance of morphological twins.

In an evening session chaired by R. W. Barratt (Dartmouth), various experimental techniques were discussed, including preliminary results with a new microinjection method developed by J. Wilson (Hartnell). In addition, Barratt and N. Strickland (Stanford) presented a revised linkage map and a pedigree showing the origin of many of the mutant and wild-type strains currently in use. A list of stock cultures— available from the new Fungal Genetics Stock Center at Dartmouth College—was presented to the participants. The problems of maintaining and adding to this collection, which is maintained by Barratt and W. Ogata, were described. The idea of publishing a newsletter for *Neurospora* workers was debated extensively. An overwhelming majority felt that there was a definite need for such a publication, and a "*Neurospora* Newsletter," edited by B. J. Bachman (Yale), is to appear in 1962.

A discussion of meiotic analyses of the more classical type was held in a session on reciprocal recombination, with D. D. Perkins (Stanford) as chairman. After a review by Perkins of the data on the nature of individual exchanges, the frequency of double exchanges, and chiasma and chromatid interference in *Neurospora*, there were discussions of chromatid interference, by Strickland; of negative chiasma interference, by D. Stadler (University of Washington); and of the genetic basis for variation in crossing over, by F. J. de Serres (Oak Ridge National Laboratory). The phenomena of "high negative interference" and "gene conversion" were discussed in a session on nonreciprocal recombination, of which de Serres was chairman. Correlations between the proportion of prototrophs of parental and recombinant genotypes

obtained in interallelic crosses with change in the map distance between markers were discussed by Y. Suyama (University of California, La Jolla) for *pyr-3* mutants, and by M. Case (Yale) for *pan-2* mutants. Mutant-specific effects discovered among *me-2* mutant crosses were presented by N. Murray (Stanford), and the effect of mutant 1710 on *hist-3* crosses was discussed by B. B. Webber (Oak Ridge). De Serres reported similar studies on high negative interference in crosses of closely linked but nonallelic mutants in the *ad-3* region. Preliminary data on the effect of chromosome rearrangements on interallelic recombination among *nic-2* mutants were given by St. Lawrence, and Case presented a tetrad analysis of a cross involving three different *pan-2* mutants to test for simultaneous conversion. The session was concluded with a discussion, led by N. Horowitz (California Institute of Technology), of various mechanisms that might explain the conversion and the high negative interference phenomena on a molecular basis.

Allelic complementation was covered in a session chaired by N. H. Giles (Yale), who reviewed the general incidence of this phenomenon in *Neurospora*. Techniques and criteria used in mapping *ad-4* mutants were given by D. O. Woodward (Brooks Air Force Base), and the relation between complementation and genetic maps was reported for *ad-8* mutants by T. Ishikama (Yale) and for *pan-2* mutants by Case. It was generally concluded that complementation maps are unidimensional and that complementation and genetic maps are colinear. A discussion of biochemical mechanisms for complementation in terms of possible molecular models concluded this session. Evidence favoring the protein-protein interaction hypothesis was discussed by J. R. S. Fincham (Massachusetts Institute of Technology), and interactions involving the protein-forming system were discussed by S. Wainwright (Dalhousie).

Genetic fine structure in relation to enzyme structure and activity was reviewed in a session led by S. R. Suskind (Johns Hopkins). Evidence for correlations between specific types of genetic damage with changes in the gene product at the protein level was discussed by Bonner (University of California, La Jolla) for the tryptophan synthetase mutants of *Neurospora* and by B. Maling and C. Yanofsky (both of Stanford) for similar mutants of *Escherichia*

coli. Similar correlations among the *hist-3* mutants between enzyme activity and map position were noted by Webber. Recent studies on the glutamic dehydrogenase produced by the *am* mutants of *Neurospora* were summarized by Barratt and Fincham.

Reversion in relation to enzyme structure and activity was discussed in a session chaired by Woodward. Bonner gave a theoretical account of the coding problem as it applies to studies of reverse mutation. The classes of revertants obtained among primary and secondary *ad-4* mutants in terms of differences in the levels of adenylosuccinase activity were given by Giles. Evidence for qualitatively different glutamic dehydrogenases in *am* revertants was presented by Fincham, and fingerprint analyses of the tryptophan synthetases of "A" mutant revertants of *E. coli* were shown and discussed by Yanofsky.

In the final session, led by Horowitz, the problem of genic interactions in protein synthesis was explored. Interactions between different genes in determining primary structure of proteins were reviewed by Yanofsky, who contrasted the findings among the tryptophan synthetase mutants of *Neurospora* and *E. coli*. Various types of interaction between mutant genes and their suppressors were discussed by Suskind for *td* mutants, by R. Davis (University of Michigan) for *pyr-3* mutants, and by B. Strauss (University of Chicago) for methionine mutants. M. Fling (California Institute of Technology) gave an example of interaction between structural and regulative genes and reported on recent work with the tyrosinase mutants of *Neurospora*.

A résumé of the proceedings will be published by the National Academy of Sciences–National Research Council.

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Forthcoming Events

February

14–16. Biophysical Soc., 6th annual, Washington, D.C. (D. Cowie, Dept. of Terrestrial Magnetism, Carnegie Institution of Washington, 5241 Broad Branch Rd., NW, Washington 15)

14–17. National Soc. of College Teachers of Education, Chicago, Ill. (E. J. Clark, Indiana State College, Terre Haute)

16–18. Medical Congr. in Honor of the Centennial of Bretonneau, Tours, France. (Directeur, École Nationale de Médecine, Tours)

17–24. Pan American Medical Women's Alliance, 8th congr., Manizales, Colombia. (C. Carthers, 1661 Riverside Ave., Suite B, Jacksonville, Fla.)

18–22. American Inst. of Mining, Metallurgical, and Petroleum Engineers, annual, New York, N.Y. (E. O. Kirkendall, AIME, 29 W. 39 St., New York 17)

18–22. Technical Assoc. of the Pulp and Paper Industry, annual, New York, N.Y. (TAPPI, 360 Lexington Ave., New York 17)

19–21. American Educational Research Assoc., Atlantic City, N.J. (G. T. Buswell, 1201 16 St., NW, Washington 6)

19–21. Tracking and Command of Aerospace Vehicles, Inst. of the Aerospace Sciences, San Francisco, Calif. (IAS, 2 E. 64 St., New York 21)

19–22. American Concrete Inst., annual, Denver, Colo. (W. A. Maples, 22400 W. Seven Mile Rd., P.O. Box 4754, Redford Station, Detroit 19, Mich.)

19–22. Industrial Ventilation Conf., E. Lansing, Mich. (Engineering Dept., Michigan State Univ., E. Lansing)

19–23. American Soc. of Civil Engineers, Houston, Tex. (W. H. Wisely, 345 E. 47 St., New York 17)

19–23. Automatic Control in the Iron and Steel Industry, intern., Brussels, Belgium. (Institut Belge de Régulation et d'Automatisme, 98 Chausèe de Charleroi, Brussels 6)

20–21. International Inst. of Sugar Beet Researchers, winter congr., Brussels, Belgium. (O. J. Kint, HSBR, 152 rue Beauduin, Tirlemont, Belgium)

21–25. National Assoc. for Research in Science Teaching, Washington, D.C. (H. Branson, Dept. of Physics, Howard Univ., Washington 1)

22–24. American Acad. of Forensic Sciences, Chicago, Ill. (W. J. R. Camp, Univ. of Illinois, 1853 W. Polk St., Chicago 12)

22–24. Genetics Soc. of Canada, Winnipeg, Man., Canada. (Scientific Liaison Office, Natl. Research Council, Sussex Dr., Ottawa, Ont., Canada)

23–24. American Physical Soc., Austin, Tex. (K. K. Darrow, APS, Columbia Univ., New York 27)

23–24. Canadian Aeronautical Inst., mid-season meeting, Halifax, Nova Scotia. (Scientific Liaison Office, Natl. Research Council, Sussex Dr., Ottawa, Canada)

25–1. Pan American Assoc. of Oto-Thino-Laryngology and Broncho-Esophagology, Caracas, Venezuela. (C. M. Norris, 3401 North Broad St., Philadelphia 40, Pa.)

26–28. Importance of Electricity in the Control of Aircraft, conf., Inst. of Electrical Engineers–Royal Aeronautical Soc., London, England. (Secretary, IEE, Savoy Place, London, W.C.2)

26–29. Central Treaty Organization, Economic Committee, Washington, D.C. (Office of Intern. Conferences, Dept. of State, Washington 25)

26–2. Current Trends in Nuclear Power, symp., Tucson, Ariz. (L. Weaver, Nuclear Engineering Dept., Univ. of Arizona, Tucson)

27–1. Application of Switching Theory in Space Technology, symp., Palo Alto, Calif. (J. P. Nach, Lockheed Aircraft Corp., Sunnyvale, Calif.)

(See 19 January issue for comprehensive list)