# Personnel Placement

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SCIENCE, Room 211
1515 Massachusetts Ave., NW
Washington, D.C. 20005

Replies to blind ads should be addressed as follows:

Box (give number)
SCIENCE
1515 Massachusetts Ave., NW
Washington, D.C. 20005

## POSITIONS WANTED

**Cryatallographer**, 28, Ph.D., 1971. Experience in x-ray structure determination, interest in neighbouring discipline. Seeking position. Christoph Gnehm, IKPETH, Sonneggstrasse 5, CH-8006 Zurich, Switzerland. X

**Editor, Writer,** M.S. in biology with publications in biochemistry, endocrinology and viral oncology, seeks position in New York City. Box 415, SCIENCE. X

## POSITIONS WANTED

**Electron Microscopist/Developmental Biologist,** Ph.D. Postdoctoral experience with freeze-etching and scanning EM. Seeks research or research/teaching position. Box 416, SCIENCE. X

**Food Chemist,** Ph.D., 28, German, speaks English, French. Desires postdoctoral or industrial position in United States or Canada. Box 417, SCIENCE. X

**Human Population Geneticist** for senior position. Able and willing to teach biometry, genetics, and so forth, to undergraduates, but requires good computer facilities. Write for summary. Box 418, SCIENCE. 12/10

**Innovative Science Ph.D.,** minor business with 20 years' broad industrial and university management experience, seeking new challenge. Would like to consider university/college presidency or equivalent with faculty interested in meeting modern challenge to higher education. Box 419, SCIENCE. 12/10

**Microbiologist,** M.S. 1971. Experience in enzymology and microbial metabolism and biochemistry. Desires challenging research position. Box 420, SCIENCE. X

**Physiologist.** Senior scientist, endocrine, cardiovascular, and environmental physiology. Substantial record of publications, grants, contracts, administrative experience. Seeks challenging academic research appointment, some teaching. Box 421, SCIENCE. X

**Physiologist,** Ph.D., 6 years' teaching experience. Special interest in human physiology and genetics. Seeks teaching position in biology or health services with opportunity for research. Box 422, SCIENCE. X

**Radiobiochemist,** Ph.D., 30, experience in new product R & D, production, environmental engineering, quality control, marketing, health physics, technical writing, and management. Expertise in labeled organic compounds and liquid scintillation counting. Challenging medical/clinical, teaching/research preferred. Employed. No agencies. Box 423, SCIENCE. X

## POSITIONS WANTED

**Specialist in Scientific Instrumentation** seeks research position; many papers on chemical, electromedical, thermometric and electronic instruments; presently visiting associate professor. Box 424, SCIENCE. X

**Translator:** English-Spanish-French (B.S.E.E., B.A. Psy, Haba). Business, engineering, social sciences, flat rate: one day/$50/1000 words ppd. Arturo Aguilar, 16918 Cranbrook, Torrence, Calif. 90504. 12/10, 17

**Woman Ecologist,** liberal arts background, Stanford Ph.D., 4 years' teaching experience, funded research. Teaching areas: ecology, evolution, quantitative biology. Box 425, SCIENCE. X

**X-ray Crystallographer,** recent Ph.D., with experience in organic structures, presently working on carbohydrates. Seeks academic or industrial position. Box 426, SCIENCE. X

## POSITIONS OPEN

### ALGAE CULTURE AND BIOASSAY

Position open for someone trained in the culturing of algae and the carrying out of bioassay tests. Should be able to identify more common algae with use of keys.

**Box 427, SCIENCE**

### AQUATIC ECOLOGIST

A distinguished limnology and ecology department situated in an East Coast museum has an opening for a Ph.D., trained in the field of pollution biology and who has broad interests in the theoretical and applied biological aspects of river pollution and is interested in improving existing technologies in sampling methods for river and stream organisms.

Excellent facilities and opportunities for collaboration with water chemists, taxonomists, and ecologists.

**Box 428, SCIENCE**

## FELLOWSHIPS

**RESEARCH FELLOWSHIP OF THE SCHIZOPHRENIA RESEARCH PROGRAM OF THE SUPREME COUNCIL 33° A.A. SCOTTISH RITE, NORTHERN MASONIC JURISDICTION, U.S.A.**

**PURPOSE**: The purpose of this Fellowship Program is to give support to a limited number of promising graduate students for a period during preparation of their doctoral dissertation in fields pertinent to the expansion of knowledge in schizophrenia. These fields are: (1) psychiatry, (2) psychology, (3) sociology and anthropology, (4) behavioral genetics, (5) neurocybernetics, epidemiology, and statistical theory, (6) biochemistry, (7) anatomy, (8) physiology, and (9) pharmacology. In general, candidates will be expected to have completed all requirements for the doctorate with the exception of the dissertation by the beginning of the fellowship year. The dissertation topic should have high potential relevance to some facet of research on schizophrenia, but it is not intended that support should be limited to applied projects or that relevance be narrowly construed.

**STIPEND**: The stipend will be $3500 per annum with $500 extra allowance per dependent up to a total of $5000, in the expectation that the institution of the applicant will either forego the cost of the tuition or will afford the candidate the means to pay the tuition. In general, it will be assumed that no stipend other than this Fellowship will be a source of income for the candidate. Grants will be made for a period of one year, with a possibility of renewal in some instances.

**APPLICATION**: *An application must be initiated by a letter from a sponsoring scientist* which includes: (a) evidence of the candidate's distinction in graduate performance, and (b) an outline of the research protocol to be pursued. If it appears that the candidate's qualifications and interests are appropriate, application forms will be sent.

Sponsoring letter should be sent as soon as possible to the **Research Fellowship Program, The Supreme Council 33° A.A. Scottish Rite, Northern Masonic Jurisdiction, U.S.A., P.O. Box 519, Lexington, Mass. 02173.** The awards will be announced by 1 April.

## POSITIONS OPEN

**Assistant Director.** Ph.D. in Nutrition/Biochemistry with experience in oral and written communication of Nutrition/Health-related information at varied levels of technicality required. Opportunity to develop, administer, and interpret an extramural research program for Midwestern Nutrition Education/Research organization as well as develop working relations with government, industry and academic scientists/educators. Salary open.

**Box 429 SCIENCE**

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**UNIVERSITY OF NEW BRUNSWICK**

**Department of Biology**

Applications are invited for a faculty position with specialization in plant ecology. Appointment will be at a level commensurate with professional experience. A candidate with the ability to develop a teaching and research program bearing upon the energy relationships and productivity of the local terrestrial and freshwater environment will be preferred.

Applications, with curriculum vitae, should be addressed to:

**Bruce G. Cumming**
**Professor and Chairman**
**Department of Biology**
**University of New Brunswick**
**Fredericton, New Brunswick**
**Canada**

as soon as possible. The appointment will commence 1 July 1972.

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**DIRECTOR—INSTRUMENTATION RESEARCH**

Immediate opening with Miami manufacturer in growing health care and science industry. Individual will head research group in research projects to define and test concepts for feasibility of instrumentation in clinical chemistry, immunohematology, and coagulation determinations. Requires successful experience in clinical laboratory environment, with background in biomedical engineering, biochemistry, physics or related fields. Excellent compensation program and full line fringe benefits. Please submit detailed resume in confidence, to:

**Director of Personnel**
**DADE DIVISION**
**American Hospital Supply Corporation**
**P.O. Box 672, Miami, Florida 33152**

**An Equal Opportunity Employer**

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**ELECTRO CHEMISTS**

The Yellow Springs Instrument Co., a small, 23-year-old manufacturer of precision thermistors, oxygen electrodes, and laboratory instrumentation is expanding R&D activities to develop electrodes for detection of biological materials. Two positions available:

—Ph.D. with 10 years' experience including electrochemistry, capable of conceiving, planning and supervising R&D programs with initial emphasis on electrode design. Opportunity to participate in new product direction and company administration.

—M.S. or Ph.D. with background in electrochemistry and experience with electrodes and electrode reactions.

Salaries commensurate with experience. Send resumes in confidence to:
H. W. Trolander, President

YELLOW SPRINGS INSTRUMENT CO.
YELLOW SPRINGS, OHIO 45387

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**ELECTRONICS SPECIALIST**

Engineering graduate (B.S.) with experience in mass spectrometry, magnetic resonance spectrometry, and general electronics maintenance work needed. Duties consist of operation, maintenance, and repair of spectrometers and related scientific equipment. Good salary, fringe and educational benefits. Send résumé to:

**St. Louis University**
**School of Medicine**
**Department of Biochemistry**
**1402 South Grand Boulevard**
**St. Louis, Missouri 63104**

## POSITIONS OPEN

**FISH BIOLOGIST**

M.S. degree minimum. Applicants should have a strong, general background in the biology and ecology of fishes, emphasizing problems in management. The ability to critically evaluate available data and offer sound advice as to the potential impact of fossil and nuclear electrical generation facilities on fish populations is requisite. An applicant with ancillary knowledge of wildlife biology would be an especially strong candidate. Experience is desirable. **Box 430, SCIENCE.**

**An Equal Opportunity Employer**

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The following positions are open at the Assistant Professor level: (1) **Invertebrate Physiologist**, (2) **Evolutionary Biologist–Comparative Morphologist**, and (3) **Environmental Biologist** (1-year appointment only). Doctorate required and candidates should have interest in teaching and research. Submit résumé to **Chairman, Department of Biology, Southern Methodist University, Dallas, Texas 75222.**

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**ORGANIC CHEMIST**

Postdoctoral appointment, available immediately. Organic chemist, preferably with biochemical interests, for joint chemistry-entomology study of insect metabolism and natural products. Ability to work with small quantities and to use spectral and chromatographic methods required. **Dr. T. W. Smith, Department of Chemistry, University of Kentucky, Lexington, Kentucky 40506.**

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**PLANKTON ANALYSES**

Position open for biologist with in-depth knowledge of estuarine phytoplankton and zooplankton systematics needed for on-going East Coast environmental program. Salary negotiable according to qualifications. Send résumé, references, and date available.

**Box 431, SCIENCE**

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**POSTDOCTORAL or RESEARCH ASSOCIATE POSITION**

Open immediately—With experience in the field of electrophysiology, neurophysiology, nerve membrane biophysics and/or processing of neuroelectric signals. Workable knowledge of French desirable. Send curriculum vitae to:

**Dr J.-M. Langlois**
**Centre de Recherche en Bionique**
**Université Laval**
**Québec 10e—CANADA**

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**RESEACH POSITION. MAMMALIAN SOMATIC CELL GENETICIST.** Applications are invited. Postdoctoral experience preferable, genetics and/or biochemistry background. Please include vita, bibliography, and references. Salary open. Excellent research facilities and operating budget at national laboratory. No teaching responsibilities unless desired.

**Box 432, SCIENCE**

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**RESEARCH SCIENTIST—OIL POLLUTION**

To pursue own research interests on oil pollution while cooperating in the development of an expanded pollution research effort. Position open early 1972. For further information, send curriculum vitae to:

**Bermuda Biological Station**
**St. George's West, Bermuda**

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**THE BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI** (Raj.) India offers senior faculty positions with challenging opportunity to persons of superior ability, boldness of approach and flair for leadership.

Positions available are open to nationals of India and also other countries. Details can be worked out for persons who wish to utilise their sabbatical for this opportunity. Particulars may be obtained on request from **Mr. Peter D. Leavitt, Room 4-234, Department of Electrical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, 02139, USA (Tel. No. (617) 864-6900 Ext. 7870).**

## POSITIONS OPEN

**SCIENCE EDITOR**

**Wanted by a Major Eastern University Press. Send résumé to**

**Box 433, SCIENCE**

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**TISSUE CULTURE TECHNOLOGIST**

Institute for General and Experimental Pathology at the University of Oslo, Norway, will move into new premises this autumn. A trained tissue- and organ-culture technologist is required.

Annual salary in the range of U.S. $5000, which is rather good in Norway according to living costs there. For further information, contact **Institute of General and Experimental Pathology, Rikshospitalet, Oslo 1, Norway.**

## COURSES

**GRADUATE STUDY IN PHARMACOLOGY.** A program leading to the Ph.D. degree involving course work and research training which stresses research on fundamental mechanisms of drug action on neural, neuro-humoral, membrane transport, and endocrine systems using electrophysiological, biochemical, and computer techniques. Full stipend and tuition available to qualified U.S. citizens. Early application for September 1972 strongly advised. **Department of Pharmacology, Schools of Medicine and Dentistry, State University of New York at Buffalo, 122 Capen Hall, Buffalo, N.Y. 14214.**

## GRADUATE STUDY

**POSTDOCTORAL FELLOWSHIP**

Applications are invited for the C. H. Best Foundation Postdoctoral Fellowship in the Banting and Best Department of Medical Research. The position is tenable on approximately 1 July 1972 for 2 years with a basic stipend of $8000 for the first year, plus traveling and dependent allowance. Research motivated candidates interested in furthering their training in research areas being investigated by department staff should submit their applications before 1 February 1972. Applications should include curriculum vitae, specific research interest, and the names of three references. A list of staff members and their research interests will be sent on request. Applications or enquiries should be sent to:

**Dr. I. B. Fritz, Chairman**
**Banting & Best Department of Medical Research**
**University of Toronto**
**112 College Street**
**Toronto 101, Ontario, Canada**

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**POSTDOCTORAL FELLOW**

**BIOCHEMIST**—One- or two-year appointment for Ph.D. with research experience and interest in enzymology related to carbohydrate and nucleotide biochemistry. Excellent research opportunities. Location—Philadelphia. Application with curriculum vitae and names of two references. Available December 1971. Send to **Box 414, SCIENCE.**

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**PRE- AND POSTDOCTORAL FELLOWSHIPS IN CLINICAL BIOCHEMISTRY:** Fellowships are available for American Board of Clinical Chemists approved Clinical Biochemistry Program beginning July 1972. Degree in chemistry or biology required for predoctoral and M.D. or Ph.D. for 2-year postdoctoral program. For information, write **Dr. T. M. Devlin, Program Director, Department of Biological Chemistry, Hahnemann Medical College, Philadelphia, Pennsylvania 19102.**

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The **FERTILIZATION AND GAMETE PHYSIOLOGY RESEARCH TRAINING PROGRAM** will be held at the Marine Biological Laboratory, Woods Hole, Mass., 12 June to 25 August 1972. Emphasis will be on immunological, cytological, biochemical, and physiological research on marine organisms, both plant and animal, available at Woods Hole. The program is open to pre- and postdoctorals. Applications must be filed by 1 March 1972 with **Dr. Charles B. Metz, Institute of Molecular Evolution, University of Miami, 521 Anastasia Avenue, Coral Gables, Florida 33134.**

# Recent Advances in the Preparation of L.S.C. Samples

## Radioactive Proteins

A paper on the *"Rapid and Simplified Method for Liquid Scintillation Counting of Radioactive Proteins"*[1] clearly indicates the advantages of Aquasol for determining radioactivity of proteins. Observed counts from replicate samples prepared in Aquasol are highly reproducible; in addition, the observed radioactivity with Aquasol is higher than with a toluene/Triton X-100 (2:1) scintillation solution. Liver samples prepared in Aquasol accurately indicate actual protein activity, as shown by a linear response to protein concentration, and by a decrease in radioactivity of protein following cycloheximide and dimethylnitrosamine. Aquasol has the unique property of forming gels when mixed with water. This gel will hold the protein in suspension. On the other hand, samples prepared in toluene/Triton X-100 (2:1) scintillation solution settle on the bottom of the vial where self-absorption becomes an important factor. A procedure using Aquasol with acid-precipitated proteins follows:

1. Apply hot acid-precipitated proteins to Millipore filter under vacuum
2. Wash filter cake
3. Place filter cake and filter into liquid scintillation vial with 3.5 ml water
4. Add 11.5 ml Aquasol, shake well and count

## Lipid Extraction From TLC

Data from the article, *"Recovery of Lipids from Thin-Layer Chromatography for Radioassay"*[2] demonstrates that the combination of a multipurpose scintillator, Aquasol, and a suitable elution system can give complete recovery of all classes of lipids from TLC plates. Both neutral and phospho-lipids give quantitative recoveries in the indicated systems. It was ascertained that up to 300mg of silica gel could be added to Aquasol without impairment of $^{14}C$ counting efficiency. Specific applications follow:

Neutral Lipids

1. Develop plate in hexane:ether:acetic acid (90:10:1)
   Unsaturated Lipids — expose to iodine vapor and allow for sublimitation of iodine.
   Saturated Lipids — develop in duplicate and spray one spot with sulfuric acid.
2. Suspend silica gel in 15 ml Aquasol
3. Shake well and count

Phospholipids (except phosphatidylcholine)

1. Develop plate in chloroform:methanol:7M ammonia (230:90:15)
2. Visualize spots by exposure to iodine vapor or $H_2SO_4$ spray
3. Suspend silica gel in 15 ml Aquasol
4. Shake well and count

## Labeled Inulin

Inulin labeled with tritium or carbon-14 is widely used for assessment of glomerular filtration rate and determination of extracellular spaces. Signficant decreases in observed radioactivity with time have, in many instances, precluded the use of liquid scintillation counting as an analytical technique. The *"Evaluation of Liquid Scintillation Systems for the Assay of Tritiated Inulin"*[3] conclude that an Aquasol/water system affords ease of sample preparation, high counting efficiency and long-term sample stability. Samples prepared by this technique remained stable over the ninety-day experimental period, maintaining a satisfactory counting efficiency of approximately 27 percent. A brief description of the sample preparation technique is as follows:

1. Place tritiated inulin aliquod in liquid scintillation counting vial
2. Adjust sample volume to 3.5 ml with water
3. Add 11.5 ml Aquasol, shake well to form stiff gel, count

## Acrylamide Gels

Data from *"Acrylamide Gel Electrophoresis of Radioactive Compounds With Accompanying Low Background"*[4] describes a method for the detection of radioactive components in polyacrylamide gel disc electropherograms by automated mechanical fractionation with the use of Aquasol. Aquasol also can be successfully utilized in the conventional, non-automated acrylamide gel counting procedures with minimal background interference. Unpublished data provided by Harris-McEvoy follows:

N, N'-methylenebisacrylamide cross-linked

1. Place 20 mg wet sample into glass liquid scintillation vial
2. Cover gel with 0.1 ml 30% $H_2O_2$ and cap tightly
3. Incubate at 50° until digested
4. Allow to cool
5. Add 10 ml Aquasol, shake well and count

Ethylene diacrylate cross-linked

1. Place 20 mg gel samples into liquid scintillation vials
2. Add 1.5 ml 10% $NH_4OH$ and cap tightly
3. Incubate at 50° until digested
4. Allow to cool
5. Add 10 ml Aquasol, shake well and count

## Reduction of Adsorption by Phosphates and Sulfates in Glass L.S.C. Vials

Data on the *"Incorporation of High Concentrations of Phosphates and Sulfates in Samples for Liquid Scintillation Counting"*[5] reports of problems associated with solubility and adsorption on the walls of glass vials by solutions of phosphates and sulfates. For instance, the loss of counts and reduction of apparent radioactivity over a period of time can be minimized by using Aquasol as follows:

1. Add up to 2 ml sample to 15 ml Aquasol
2. If precipitation or turbidity occurs, add water in increments of 0.2 ml, with shaking, until sample clears
3. Count

## 30% (W/V) Sucrose Density Gradients

Thirty percent (w/v) Sucrose gradient cuts were measured by liquid scintillation counting utilizing Aquasol. The results for tritium labeled samples follow:[6]

| Sample Volume | Aquasol Volume | % of Sample | $^3H$ Efficiency | Figure of Merit† |
|---|---|---|---|---|
| 0.5 ml | 14.5 ml | 3.3 | 29.9 ± 0.1%* | 14.9 |
| 1.5 ml | 13.5 ml | 10.0 | 29.3 ± 0.4% | 44.0 |
| 2.5 ml | 12.5 ml | 16.7 | 27.0 ± 0.6% | 67.5 |
| 3.5 ml | 11.5 ml | 23.3 | 26.7 ± 0.1% | 93.3 |

†Figure of Merit = (volume added sample) (efficiency)

- Counting performed on Packard TriCarb Model 3320
- Absolute efficiency of TriCarb is 60% with sealed $^3H$ standard in toluene
- Settings: Gain — 50%, Discriminators 50-1000
- 3 samples at each point. Internal standard = 125190 DPM
- All samples clear at room temp.

*S.D. of the mean

### References and Notes


1. Marvin A. Friedman, Gail Miller, Arthur McEvoy and Samuel S. Epstein, *Anal. Chem.*, Vol. 43, No. 6 (1971).
2. David Kritchevsky and Saroj Malhotra, *J. Chromatog.*, 52, 498-499 (1970).
3. Arthur McEvoy and Wayne G. Harris, *Anal. Biochem.* (in press) (1971).
4. Bohdan Bakay, *Anal. Biochem.*, 40, 429-439 (1971).
5. Unpublished data, Assay Laboratory, NEN Corp.
6. Unpublished data, Assay Laboratory, NEN Corp.