

# Personnel Placement

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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

**Biochemist.** M.S., biochemistry. Ten years of research experience. Seeks position (academic, government, industry) where extensive experience will be utilized and is required. Background: protein and carbohydrate structure, enzymology, carbohydrate metabolism, steroids, and analytical methodology (wet and instrumental). Publications. East Coast preferred. Available Fall 1970. Box 379, SCIENCE. 10/30

**Biochemist.** Ph.D. with 8 years of experience in purification of proteins and radioimmunoassay of peptides and steroid hormones. Seeking opportunity with commercial institution to establish and supervise protein purification and/or radioimmunoassay laboratory and to develop new tests. Box 401, SCIENCE. X

**Biologist.** M.S. Six years of research experience in herpetology, pharmacology, and larval culture of marine organisms. Scientific illustration. Desires job with advancement opportunity. Résumé upon request. Box 402, SCIENCE. X

**College Teacher.** Ph.D., physics (solid state theory), 1965. Five years' experience at large state university. Desires permanent job teaching physics and/or mathematics at 4- or 2-year college. Any scenic location in western United States. Available fall 1971 or 1972. Box 403, SCIENCE. X

**Electron Microscopist.** two B.S. degrees; 4½ years of research experience. Desires responsible position in medical research. Versatile, cancer, dermatology, Philips, Siemens, LKB, Huxley, East. Box 404, SCIENCE. X

**Executive Research Secretary.** Multilingual, intelligent, mature woman; experienced: library searches, abstracting, translating, preparation of manuscripts. Available for Free-Lance Assignments in New York City. Or: Would relocate to pleasant university town anywhere United States or Canada for meaningful, permanent, position. Box 405, SCIENCE. X

**Generalist.** Ph.D., pharmacology with 10 years of industrial and non-industrial experience. Salary requirement, middle \$20's. Box 406, SCIENCE. X

**Immunologist.** Ph.D., 33, 5 years of academic/industrial experience. Strong background immunoglobulin structure, immunochemistry. Current interest cellular immunology. Experience in graduate and medical school teaching. Desires teaching/research position. Will consider smaller liberal arts college. Box 408, SCIENCE. X

## POSITIONS WANTED

**Medical Microbiologist.** Ph.D. 1970. Diagnostic, research, teaching experience. Desires Public Health/research/teaching. Box 409, SCIENCE. X

**Molecular Biologist.** B.A. (zoology), Ph.D. (biophysics), postdoctoral research fellow. Seeks primarily undergraduate teaching: biology, genetics, biochemistry, philosophy of science. Any where but Northeast. Available 1971. Box 410, SCIENCE. 10/30

**Neurobiology.** Ph.D. (physiology) 1967. Brain lipids, maternal nutrition, CNS development. Administration, teaching, or research. College or industry within 150 miles of New York City. Fall, 1971. Box 411, SCIENCE. X

**Neuropharmacologist.** Ph.D. 35, 5 years of university experience. Publications. Desires academic or research position in the West. Box 412, SCIENCE. X

**Neurophysiologist.** Ph.D. (1962). Experience teaching at graduate, undergraduate, and medical school levels. Extensive publications. West preferred. Box 413, SCIENCE. X

**Pharmacologist.** Ph.D.: experience in pharmaceutical industry (pre- and postdoctoral) and graduate teaching. Desires primarily teaching/research position. All locations considered. Box 414, SCIENCE. X

**Planning or Possess Drug/Pollutant Analytical Facility?** Need Ph.D. experienced in R & D, applications, administration of same? Want man with broad biomedical teaching/research background? Staring at this ad won't solve your recruiting problem, but answering it might. No agencies. Box 415, SCIENCE. X

**Plant Physiologist.** Ph.D., professor. Twenty years of teaching and research. Wants to return to simple life as research associate. Salary, security of secondary importance. Box 416, SCIENCE. X

**Translation.** Most major languages. Technical-scientific-medical. Widely experienced staff. Over 20 years' experience. Box 417, SCIENCE. X

## POSITIONS OPEN

Applications are invited for **RESEARCH-ORIENTED FACULTY.** M.S. degree is offered; new building is slated for completion in 1973. Positions open (September 1971) in genetics, developmental, cell-molecular, cytology, animal physiology, immunology, and audio-video tutorial techniques. Send vitae to:

Dr. Theodore J. Starr  
Department of Biological Sciences  
State University College  
Brockport, New York 14420

New position in areas of chemistry related to biology. Physical chemist and organic chemist at professor or associate professor level. Also bioinorganic chemist, rank open. Send replies to **Bruce Martin, Chairman, Chemistry Department, University of Virginia, Charlottesville, Va. 22901.**

## CONSERVATIONIST-BIOLOGIST

Full professor with varied field experience and rich environmental philosophy preferred for medium size midwestern university. Must enjoy working with students and youth groups. Major portion of teaching will be at the undergraduate level. He should be able to offer guidance and counsel to a developing Ph.D. program. Appointment effective January or August 1971 at the latest. Salary open!

Box 399, SCIENCE

## DIRECTOR

Young, interdisciplinary scientist is being sought to fill a position of director of an interdisciplinary basic scientific research and educational institution. Creativity and imagination are crucial values. Salary commensurate.

Box 400, SCIENCE

## POSITIONS OPEN

# HEALTH AND ALLIED INDUSTRY CAREERS

Drug, chemical, instrumentation, food, cosmetic, and toiletry industries.

Many challenging openings for R. & D., quality-control, production, engineering, bio-electronic and computer scientists, with or without industry experience.

Our executive search specialists will work with you in complete confidence. Our clients pay all fees. Send your curriculum vitae, geographic preference, and salary requirements to:



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## DEAN

**College of Earth Sciences and Mineral Industries  
University of Alaska at College**

Experience required in university, industrial and/or government organization in any field of earth science. Please send résumé to:

Dr. D. W. Hood, Chairman  
Faculty Screening Committee  
University of Alaska  
College, Alaska 99701

## PHYSICIAN

M.D. or M.D., Ph.D.

A physician with advanced training is needed to participate in interdisciplinary team efforts investigating potential pharmacological agents in diseases of bone and skin. His primary responsibility would be in studying the effects of these compounds in man, but he is also expected to participate in the planning and interpretation of animal and in vitro studies.

This career position offers opportunity for both professional and intracompany growth, and the salary is open. No prior industrial experience is required.

Cincinnati is an urban area offering excellent cultural activities, restaurants, and shopping. The laboratories are in a picturesque rural setting about 20 miles northwest of downtown Cincinnati.

For further information, contact **Karl E. Lerman, Ph.D., The Procter & Gamble Company, Miami Valley Laboratories, P.O. Box 39175, Cincinnati, Ohio 45239**, or call collect 513-738-1111 or 521-2648.

*An Equal Opportunity Employer*

## University of Stuttgart, F.R. Germany

The faculty of Geo- and Biosciences of the University of Stuttgart invites applications for the recently established Chair of Animal Physiology. Preference will be given to applicants doing research in neurophysiology. Applications with curriculum vitae and list of published papers should be submitted by 6 December 1970 to: **Dekan des Fachbereichs Geo- und Biowissenschaften, Universität Stuttgart, Postfach 560, D 7 Stuttgart 1, German F.R.**

## POSITIONS OPEN

### ASSISTANT DIRECTOR OF CLINICAL MICROBIOLOGY/IMMUNOLOGY, Ph.D.

Eligible for licensure in California. We are looking for a rare combination of technical and management skills. Supervisory experience in clinical laboratory desirable. Position results from expansion. Excellent fringe benefits. Salary commensurate with experience. Send curriculum vitae to:

**I. Olitzky, Ph.D.**  
Director of Microbiology/Immunology  
BIO-SCIENCE LABORATORIES  
7600 Tyrone Avenue  
Van Nuys, California 91405

### THE HEBREW UNIVERSITY OF JERUSALEM Institute of Life Sciences

Applications are invited for a regular appointment to an associate or full professorship in

#### GENETICS

The responsibilities of the holder of this position will include the teaching of an undergraduate course in General Genetics—in rotation with other members of the department's staff. Further information, if required, can be obtained from the chairman of the genetics department at the above address.

Applications should be submitted to the **Dean of the Faculty of Science, The Hebrew University of Jerusalem, Jerusalem, Israel**, and should reach the Dean's Office by 1 January 1971.

### ALTARAMA MINERALS N. L. Australia require

**Geologists' and Senior Geologists** to expand their exploration program in one of the most interesting and rewarding areas of the world. Present activities include exploration for bauxite in Cape York and base metals in North Queensland; lead—zinc—barium, vanadium and copper in S. A., and copper and nickel in W. A.

#### Geologists for field exploration

The field geologists will be required to supervise and maintain a geological exploration program as directed by the Board. This would involve supervision of field assistants—geological mapping—collection of samples etc. and submission of written reports regarding progress made.

**Senior Geologists** of at least four years experience for supervision of projects. The senior geologists envisaged would have under them a number of field geologists and would be required to co-ordinate an exploration program in a particular area.

Salaries will be negotiated at a level commensurate with qualifications and experience. Geological staff have four weeks annual leave, share options, a contributory super-annuation scheme and field expenses and travel within Australia paid. Reasonable accommodations and relocation expenses will be paid by the company.

Applications giving appropriate details should be made to:

**The Directors**  
Altarama Search Pty. Limited  
Suite 903  
Temple Court  
75 Elizabeth Street  
Sydney, N. S. W. 2000  
AUSTRALIA

Additional information may be obtained from:

Professor J. Bruce See  
Department of Metallurgy and  
Materials Science  
Room 4-138  
Massachusetts Institute of Technology  
77 Massachusetts Avenue  
Cambridge, Massachusetts 02139  
U.S.A.

## POSITIONS OPEN

### DIRECTOR ENVIRONMENTAL STUDIES

Preferred—strong background in appropriate areas of biology, or in politics or sociology with some training in biology. Associate or Professor. Start September 1971. Write **Dean, Cedar Crest College, Allentown, Pa. 18104**.

*An Equal Opportunity Employer*

#### EDITOR

**M.D.**, under 45 wanted to join editorial staff of large midwestern clinical, research, and teaching institution; mostly editing of medical and basic-sciences manuscripts; opportunity for some teaching; doctorate in medicine and some editorial training or experience required.  
**BOX 390, SCIENCE**

The UNIVERSITY OF WINDSOR invites qualified applicants to apply for the position of **SENIOR SCIENCE LIBRARIAN (Grade III)** to assume responsibility for reference and bibliographic services in science and technology, and to act as liaison between the library and the science and engineering departments. Development of the collections in these areas will be a major responsibility. Prospective applicants should have a strong academic background, preferably a Master's degree in one of the physical or life sciences, combined with a degree from an accredited school of librarianship and not less than 4 years' experience in an academic library. Expanding medium-sized university situated across the international boundary from Detroit. Addition which will triple present building capacity is due for completion 1 July 1971. Salary range Can. \$10,350-15,400. Fringe benefits include 1 month's vacation, sick leave, medical, hospital, disability and group insurance, pension plan. Appointment will be made effective 1 July 1971. Earlier appointment date would be considered. Applications, including curriculum vitae, should be directed to: **William F. Dollar, University Librarian, University of Windsor, Windsor, Ontario, Canada**.

**MICROBIOLOGISTS, B.S./M.S.** Minimum 1 year experience. Research antibiotics and assay procedures. Able to maintain culture collection. **BIOCHEMIST, M.S./Ph.D.**, 2 to 5 years' experience enzymology, fermentation and purification and/or protein synthesis. Knowledge of biochemical techniques helpful. For professional career counseling in the life and chemical sciences in addition to professional placement contact **Art Schlesinger, CONSULTANTS Inc., 220 Lenox Ave., Westfield, N.J. (201) 233-8444**.

## MANAGER, VETERINARY PHARMACEUTICAL RESEARCH

An immediate opening exists in our growing Research Division for a veterinarian with experience in large and small animal clinical medicine and pharmaceutical research with emphasis in reproductive physiology, parasitology and anesthesiology. Pitman-Moore offers a sound salary program, liberal fringe benefits and modern facilities. Please contact:

**J. J. KUHN, JR.**

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## POSITIONS OPEN

An immediate opening exists for a recent **Ph.D. Immunologist/Biochemist** to work with investigator on research project related to the immunology of membrane proteins. Appointment is for 2 years with a stipend of \$8000 per annum. Excellent facilities in established research laboratory. Forward applications, curriculum vitae, names of three references to **Michael O. Hall, Ph.D., Jules Stein Eye Institute, UCLA School of Medicine, Los Angeles, California 90024**.

**VACANCY FOR PROFESSOR AND HEAD, DEPARTMENT OF PHARMACOLOGY**, Faculty of Medicine, University of British Columbia, beginning 1 July 1971. Inquiries or credentials should be sent promptly to **Sydney Segal, M.D., Chairman of the President's Advisory Committee on the New Head of Department of Pharmacology, University of British Columbia, 715 West 12th Avenue, Vancouver 9, B.C., Canada**. The University will not be bound by this notice in the selection or its timing.

#### VIROLOGIST-IMMUNOLOGIST

Experienced M.D. or Ph.D. for a newly established staff teaching and research position. Initiate and conduct independent research program. University medical school affiliation.

Send curriculum vitae and three references to: **E. J. Hawrylewicz, Ph.D., Director of Research, Mercy Hospital and Medical Center, Stevenson Expressway at King Drive, Chicago, Illinois 60616**.

## GRADUATE STUDY

**Traineeship available in Molecular Toxicology, and Comparative Biochemistry.** Stipends \$2400 per year plus \$500 per dependent, free tuition and fees. Majors may be elected in biochemistry, physiology, genetics, botany, entomology, crop science, and statistics. Recipients must be U.S. citizens or lawfully admitted permanent residents. For further information write to **F. E. Guthrie, Department of Entomology, North Carolina State University, Raleigh, North Carolina 27607**.

### GRADUATE STUDY IN ENVIRONMENTAL HEALTH SCIENCES AND ENGINEERING School of Public Health Harvard University

Fellowships are available to U.S. citizens for graduate studies leading to the Master or Doctor of Science in environmental physiology, toxicology, air pollution control, radiological health, industrial hygiene, medical radiation physics, and occupational medicine. Stipends range from \$250 to \$500 per month, plus an allowance for dependents and full tuition and fees. Further details may be obtained from **Dr. Dade W. Moeller, Harvard School of Public Health, 665 Huntington Avenue, Boston, Massachusetts 02115**.

#### TRAINEESHIP IN DIABETES

Two NIH traineeships available in experimental and clinical research in diabetes mellitus at New York Medical College starting 1 July 1971. U.S. citizen or immigration visa. Stipend: Up to \$11,000. Send curriculum vitae to

**R. A. CAMERINI, M.D.**  
1249 Fifth Ave.  
New York 10029

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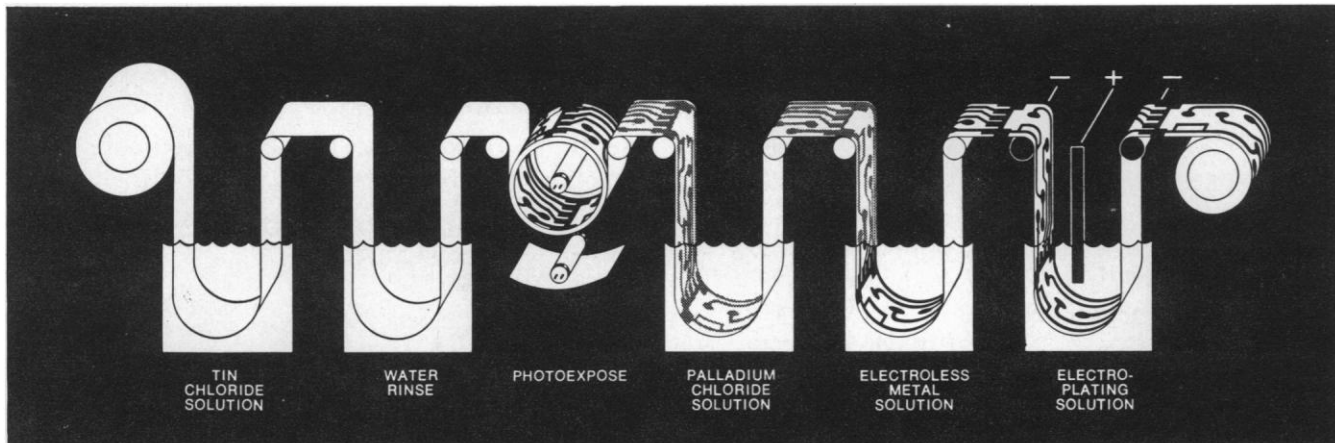
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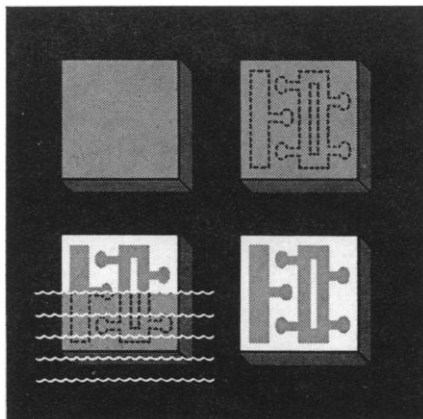
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## Solving subtraction problems with addition



Schematic of PSMD with flexible substrate: After dipping in tin chloride solution, substrate is rinsed off, leaving tin oxide coating; exposed to UV light, dipped into palladium chloride solution, electroless metal solution, and electroplated.



Usual method of making circuits requires coating substrate with photo-resist, exposing, eliminating exposed photo-resist, and etching away uncovered copper.

Most people make printed circuits by putting a layer of copper on a substrate and etching away the unwanted part. But engineers at Western Electric's Engineering Research Center in Princeton, N.J., have devised a way to do exactly the opposite: add copper only where it's wanted. "Photo Selective Metal Deposition," now being introduced into Western Electric factories, works this way:

The substrate is coated with tin oxide, then dipped in a palladium chloride solution. Tin oxide reduces the palladium ions to palladium metal, so the surface now has a coating of palladium. If the substrate is dipped in an

electroless copper bath, this palladium causes the copper to plate.

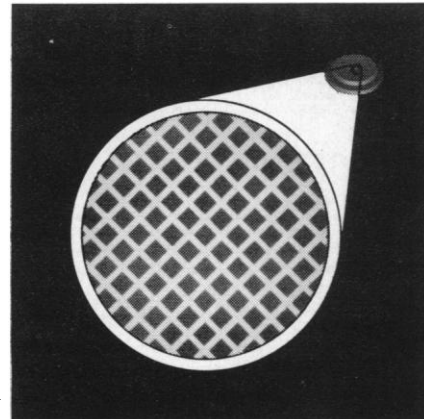
But the plating depends upon the presence of palladium, which depends upon the reducing ability of tin oxide. And *that* is destroyed by exposure to ultraviolet light.

So. We expose the coating to ultraviolet light through a mask of the circuit before dipping it into the palladium chloride. We thus get palladium—and hence copper—only on the unexposed portions. (Because chemical plating is slow, we can add electroplating if we want thick copper quickly.)

Now, our engineers have gone to considerable time and trouble to develop this new process because while the subtractive method makes perfectly fine circuits, it also makes problems. The copper salts formed by the etching-away process are quite poisonous and must be disposed of. To put down that initial layer of copper you need copper foil, which is expensive. Reclaiming the copper unused is laborious and can be expensive. *Not* reclaiming it means throwing away up to 70% of the copper you start with.

Considering the number of printed circuits Western Electric makes for the Bell System, these become major problems indeed. But by adding where we used to subtract, we not only solve those problems, we eliminate them.

We also get other benefits. The



Grid used in Picturephone® camera, produced experimentally by PSMD: It has 8 micron lines on 1 mil centers.

process can be used for one or both sides of rigid or flexible substrates, and with other metals beside copper. The pattern can be peeled off certain substrates, giving us an excellent way to make intricate connections. And, because the light used for exposure is UV (higher in the spectrum = shorter wavelength = better detail), resolution is good enough for us to make the kind of thing shown just above.

Exactly the kind of development most pleasing to us at Western Electric.



**Western Electric**

# It took us years to develop the best stereo microscope. Now give us a few minutes to prove it.

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Our microscope offers high resolution, larger fields of view, greater working distance. We have as wide a magnification range as you're likely to need: a full 6 to 1 zoom range with magnifications from 3.5 X through 210 X. The zoom control knob is coupled—so that it's conveniently located on both sides, for either left or right-hand operation. And the entire head is easily rotatable through 360°.

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