

## Unprecedented versatility in automatic Beta/Gamma Spectrometry with the NE8312

- Liquid scintillation *and* gamma counting
- 400 samples
- Automatic selection of all counting parameters
- External gamma-source standardisation using two independent channels
- Three counting channels in each of two independent groups
- \* Independent computation
- \* Room temperature operation

The NE 8312 counts betas by coincidence liquid scintillation counting; gammas are counted in a 3in radial-hole NaI crystal with dual coincidence photomultipliers, which gives much better energy resolution and discrimination against background than is possible with a well crystal. Data is recorded on a page printer/tape perforator and an on-line desk computer is a cost-effective option. Low-activity rejection and background rate subtraction from

all channels independently are provided. Operation is at room temperature and betas and gammas can even be counted in the same vial. For details of the NE 8312 and the Nuclear Enterprises range of scintillators, write to :-



**NUCLEAR  
ENTERPRISES  
LIMITED**

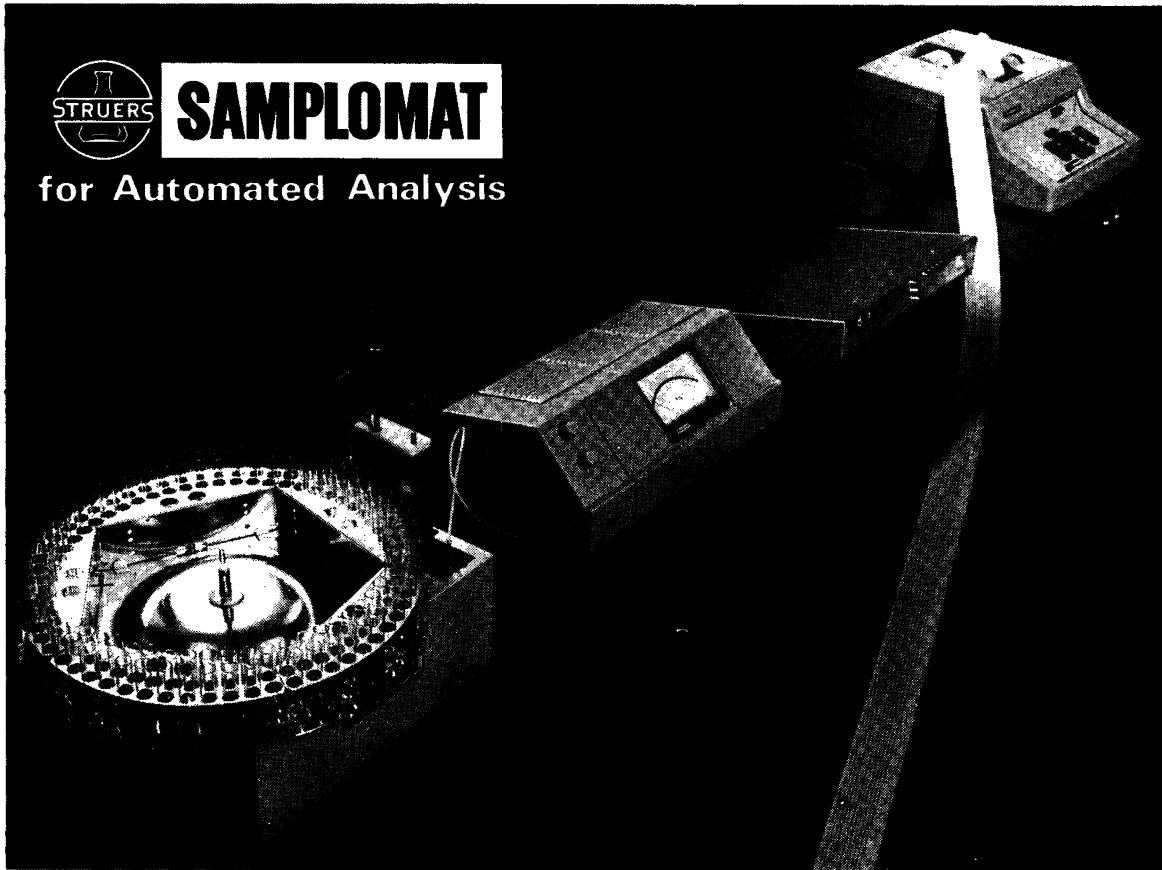
Sighthill, Edinburgh EH11 4EY, Scotland. Tel: 031-443 4060  
Cables: Nuclear, Edinburgh Telex: 72333

Associate Companies: Nuclear Enterprises GmbH, Neherstrasse 1,  
8 Munich 80, Telephone: 44-37-35. Telex: 529938  
Nuclear Enterprises Inc., 935 Terminal Way, San Carlos,  
California 94070, Telephone: 415-593-1455



# SAMPLOMAT

for Automated Analysis



THE SAMPLOMAT offers an easy way to laboratory automation because it is made for use with standard measuring and recording instruments.

The SAMPLOMAT integrates existing individual instruments into one versatile and flexible automated system. This is achieved by automating the final tedious steps which end many analytical procedures; namely the introduction of samples into an optical instrument and the reading and recording of the results. The SAMPLOMAT can be used for most analyses which finish with a liquid sample for photometric or similar measurement.

The SAMPLOMAT can be connected to any colorimeter, spectrophotometer or other measuring instrument, and to any recorder, digital read-out, data printer or similar device.

Details from  
the Sole U.K. Agents

## Camlab Cambridge



Post Code: CB4 1TH  
Telephone (0023) 62222

**This equipment will be  
demonstrated on  
Wednesday 17th December  
during the 500th Meeting of  
The Biochemical Society  
University College London  
(15th-17th December)**

Radiation monitors and Radiochromatogram  
Scanning equipment will also be on display.

# ADVERTISING RATES

Cover and Special Positions	£46
Full Page	£38
Half Page	£20
Quarter Page	£11
Agency Commission	10%
Publisher's Discount	10%

All communications regarding advertising matters should be addressed to:

Advertisement Section,  
Biochemical Society,  
7 Warwick Court,  
London, WC1  
Telephone: 01-405 1941

# THE BIOCHEMICAL JOURNAL

## HUNTINGDON RESEARCH CENTRE

The rapid development of our Department of mammalian METABOLIC STUDIES is creating a need for the following new appointments:

### SENIOR SCIENTIST

An Organic Chemist, with Ph.D. degree and some years' postdoctoral experience, who has acquired extensive manipulative skills and who would be prepared to tackle difficult problems in a biochemical context.

This is a responsible key position calling for adaptability, enthusiasm and the capacity to cooperate well with people.

### RESEARCH OFFICERS

Applicants should have a B.Sc. degree or Higher National Certificate in Applied Biology or Chemistry, followed by a few years' experience in a modern Biochemical, Chemical or Pharmacological Laboratory. Experience with radiochemicals would be an advantage but is not essential.

Starting salaries will be according to age, qualifications and experience.

Applications should be addressed to the Personnel Officer, Huntingdon Research Centre, Huntingdon, quoting reference DEH.

## THE UNIVERSITY OF ASTON IN BIRMINGHAM

### DEPARTMENT OF BIOLOGICAL SCIENCES

Applications are invited for the post LECTURER in MICROBIOLOGY/BIOCHEMISTRY, with interest in fermentation, protein synthesis, biodeterioration or biodegradation of natural products. Microbiology and Biochemistry are taught throughout the Biological Sciences Honours degree course.

A specialisation in microbial physiology (for example bacterial metabolism) and biochemistry would be desirable.

#### Salary scale:

£1,240 × £115 to £2,045 (bar) × £115 to £2,850 p.a.

Application forms and further details may be obtained from the Staff Officer (Ref. No. 726/139), The University of Aston in Birmingham, Gosta Green, Birmingham 4, to whom applications should be forwarded within 14 days of the appearance of this advertisement.

# Hoppe-Seyler's Zeitschrift für Physiologische Chemie

Editors in chief

A. BUTENANDT · K. THOMAS · G. WEITZEL

Subscription Rates

For one volume (12 parts) DM 360,—

Vol. 350 No. 9

Contents

September 1969

The effect of blue light on glycolate oxidase of tobacco

by G. H. SCHMID

Virusproteins, IV: The constitution of the coat protein of the fd phage

by F. ASBECK, K. BEYREUTHER, H. KÖHLER, G. V. WETTSTEIN and G. BRAUNITZER

Interactions between oestrogens and catecholamins, I: Influence of enzymatic methylation of catechol amines on oestrogens and vice versa

by R. KNUPPEN, W. LUBRICH, O. HAUPT, U. AMMERLAHN and H. BREUER

Volatile aldehydes in the odoriferous secretion of the stink bug *Libyaspsis angolensis*

by S. CMELIK

A method for the preparation of ceramides from brain gangliosides and the nature of their sphingosine bases

by E. KLENK and R. T. C. HUANG

2-Deoxy-2,3-dehydrosialic acids, II: Competitive inhibition of *Vibrio cholerae* neuraminidase by 2-deoxy-2,3-dehydro-*N*-acylneuraminic acids

by P. MEINDL and H. TUPPY

XXI. Communication on seed proteins: The occurrence of prolamines in meadow grasses and a comparison with the prolamines of cereals

by H. KLING

The evolution of endopeptidases, X: The specificity of the low molecular weight protease from *Astacus leptodactylus* Esch.

by H.-H. SONNEBORN, R. ZWILLING and G. PFLIEDERER

Studies on the cytochrome *c* of the tube worm *Tubifex* (*Annelida*, *Oligochaeta*)

by A. HENNIG, H.-J. HORSTMANN and L. GÜRTLER

Studies on protein structure and enzyme activity, III: Inhibition by pyridoxal 5'-phosphate of glucose-6-phosphate dehydrogenase and other enzymes of carbohydrate metabolism

by W. DOMSCHKE and G. F. DOMAGK

Studies on protein structure and enzyme activity, IV: Demonstration of essential histidine residues in the glucose-6-phosphate dehydrogenase from *Candida utilis*

by W. DOMSCHKE, H. J. ENGEL and G. F. DOMAGK

Mitochondria from brown adipose tissue: Uncoupling of oxidative phosphorylation by long chain fatty acids and recoupling by guanosine triphosphate

by J. RAFAEL, H.-J. LUDOLPH and H.-J. HOHORST

The effect of antilymphocyte serum and phytohaemagglutinin on respiration and glycolysis of normal human lymphocytes

by R. AVERDUNK and H.-J. KIRSTAEDTER

Oligosaccharides from *Streptococcus lactis*: a new glucotriose, 4-*O*- $\alpha$ -D-glucopyranosyl- $\alpha$ , $\alpha$ -trehalose, and homologues

by W. FISCHER and K. WINKLER

## SHORT COMMUNICATIONS

Complete amino acid sequence of a  $\lambda$ -chain of subgroup II (BENCE-JONES-protein VII.): Evolution as the basis for antibody specificity

by H. PONSTINGL and N. HILSCHMANN

Different binding of solvent to the peptide carbonyl group in different conformational environments induces the Helix I  $\rightleftharpoons$  Helix II transition of poly-L-proline

by H. STRASSMAIR, S. KNOF and J. ENGEL

Walter de Gruyter & Co · Berlin 30

# CLINICAL SCIENCE

## EDITORIAL BOARD

### *For the Medical Research Society*

J. M. LEDINGHAM, *Chairman*

J. E. COTES, W. I. CRANSTON, A. M. DAWSON,  
C. J. DICKINSON, J. S. ROBSON, S. J. G. SEMPLE

### *For the Biochemical Society*

T. FREEMAN, *Deputy Chairman*

BARBARA E. CLAYTON, R. HOFFENBERG, R. G. HUNTSMAN,  
W. H. TAYLOR, G. R. WEBSTER, L. G. WHITBY

Vol. 37, No. 3

DECEMBER, 1969

- Serum protein concentrations in normal infants. By BERENICE ABRAMS and T. FREEMAN.
- The effect of angiotensin on isolated rabbit renal tubules. By J. K. HEALY, J. B. DOUGLAS and J. E. ARNOLD.
- The cardiovascular response to vertebral artery infusions of angiotensin in the dog. By R. D. LOWE and G. C. SCROOF.
- Efferent pathways of the cardiovascular response to vertebral artery infusions of angiotensin in the dog. By G. C. SCROOF and R. D. LOWE.
- The interrelationships of calcium and sodium excretions. By M. R. WILLS, J. R. GILL, Jr. and F. C. BARTER.
- Alterations in carbohydrate metabolism in Jamaican children with severe malnutrition. By G. A. O. ALLEYNE and G. H. SCULLARD.
- Post-prandial plasma-free amino acids in adult coeliac disease after oral gluten and albumin. By A. P. DOUGLAS and C. C. BOOTH.
- Proximal tubular acidification in man. By R. ARDAILLOU and J. P. FILLASTRE.
- Parathyroid hormone metabolism in man: effect of nephrectomy. By R. A. MELICK and T. J. MARTIN.
- Absorption products of D(-)-fructose in man. By G. C. COOK.
- The effects of inhibition of carbonic anhydrase with dichlorphenamide on ventilatory control at rest and on exercise in normal subjects. By A. CHESA, T. B. STRETTON, A. A. E. MASSOUD and J. B. L. HOWELL.
- Response of kidney and salivary gland G-6-PD and renin to adrenalectomy, angiotensin, bradykinin and meralluride. By J. P. CAPELLI, L. G. WESSON, Jr. and G. E. APONTE.
- Circulatory effects of breathing oxygen in patients with chronic anaemia. By E. HOUSLEY and R. B. HEDWORTH-WHITTY.
- The disappearance of labelled human growth hormone from the forearm circulation in normal and diabetic subjects. By BARBARA J. BOUCHER, W. J. H. BUTTERFIELD and MARGARET J. WHICHELOW.
- Hypoxic pulmonary vasoconstriction in unanaesthetized with constant arterial PCO<sub>2</sub> and pH. By O. G. THILENUS and CAROL DERENZO.
- Rheological evidence for the existence of dissociated macromolecular complexes in rheumatoid synovial fluid. By J. FERGUSON, J. A. BOYLE and G. NUKI.
- Observations on the intestinal absorption of some oligopeptides of methionine and glycine in the rat. By D. M. MATTHEWS, MARIA T. LIS, B. CHENG and R. F. CRAMPTON.
- The effect of age, sex and exercise on the secretion of growth hormone. By J. M. BUCKLER.
- Factors responsible for proximal sodium conservation as assessed by distal tubular blockade. By S. GARELLA, J. A. CHAZAN and J. J. COHEN.
- The responses to exercise in boys aged 9-15 years. By SNEH GADHOKE and N. L. JONES.
- Role of various causes of arterial desaturation in liver cirrhosis. By A. CHESA, G. CIAPPI, L. BALBI and L. CHIANDUSSI.
- The metabolism of ammonia in liver disease: a comparison of urinary data following oral and intravenous loading of [<sup>15</sup>N]ammonium lactate. By W. M. B. GAY, C. W. CRANE and W. D. STONE.
- The enterohepatic circulation of urea nitrogen. By E. A. JONES, R. A. SMALLWOOD, ANNE CRAIGIE and V. M. ROSENOER.
- Abnormalities of fibrin stabilization in liver and kidney disease: a comparison of two different methods. By W. D. WALLS and M. S. LOSOWSKY.
- Factors determining the distribution of pulmonary blood flow in patients with raised pulmonary venous pressure. By J. M. B. HUGHES, J. B. GLAZIER, D. Y. ROSENZWEIG and J. B. WEST.
- The influence of dietary sodium and potassium intake on the genesis of frusemide-induced alkalosis. By Ch. van YPERSELE de STRIHOU and J. MORALES-BARRIA.

*Subscription Rate: £5 (\$17.50) per volume of 3 parts; £10 (\$35.00) per year.*

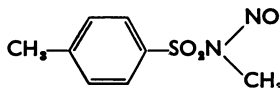
*Orders may be placed with your bookseller, or sent direct to the publishers.*

**BLACKWELL SCIENTIFIC PUBLICATIONS LTD**

5 ALFRED STREET, OXFORD, ENGLAND

# DIAZALD®

(N-Methyl-N-nitroso-p-toluenesulfonamide)



## for the preparation of DIAZOMETHANE

**FORMULA:** C<sub>8</sub>H<sub>10</sub>N<sub>2</sub>O<sub>3</sub>S

**M.W.** 214.24

### DESCRIPTION AND CONSTANTS:

Fine yellow crystals

M.P. 61–62°

Purity 98%

Soluble in ether and most organic solvents, insoluble in water

### Application and Literature:

Diazald® is probably the most useful reagent yet developed for the preparation of diazomethane. It is stable at room temperature for at least a year. (See, however, the precaution published in *Org. Syn. Coll. Vol. IV*, p. 945: "Although this material has been kept at room temperature for years without significant change, there has been reported one instance in which a sample stored for several months detonated spontaneously. For long periods of storage, it is recommended that the material be recrystallized and placed in a dark bottle.") Diazald® is not a skin irritant to most people, though we recommend that all nitroso compounds be handled with care, and that contact with the skin be avoided.

The following is abstracted largely from *Rec. trav. chim.* **73**, 229 (1954) and from the Ph.D. thesis of Dr. T. J. de Boer, Groningen, 1953.

#### 1. Preparation of ethereal-alcoholic solutions of diazomethane:

Ethanol (95%, 25 ml) is added to a solution of potassium hydroxide (5 g) in water (8 ml) in a 100 ml distilling flask fitted with dropping funnel and an efficient condenser set downward for distillation. The condenser is connected to two receiving flasks in series, the second of which contains 20–30 ml ether. The inlet tube of the second receiver dips below the surface of the ether, and both receivers are cooled to 0°.

The flask containing the alkali solution is heated in a water bath to 65°, and a solution of 21.5 g (0.1 mole) of Diazald® in about 200 ml of ether is added through the dropping funnel in about 25 minutes. The rate of distillation should about equal the rate of addition. When the dropping funnel is empty, another 40 ml of ether is added slowly and the distillation is continued until the distilling ether is colorless. The combined ethereal distillate contains about 3 g of diazomethane.

Diazomethane is not only exceedingly toxic, but its solutions have been known to explode quite unaccountably. Hence, ALL WORK WITH DIAZOMETHANE, regardless of how it is generated, SHOULD BE CARRIED OUT BEHIND SAFETY SHIELDS IN EFFICIENT HOODS.

In most reactions of diazomethane, the presence of ethanol is not harmful; in some, a promoting influence is reported<sup>1</sup>. If the acid chloride is not too reactive, even the Arndt-Eistert reaction can be carried out in a medium containing alcohol<sup>2</sup>. In the reactions of diazomethane with reactive acid chlorides, with aldehydes, and in a few other reactions<sup>3</sup>, ethanol must be absent. Procedure 2 is then used.

#### 2. Preparation of alcohol-free ethereal solutions of diazomethane:

2-(2-Ethoxyethoxy)-ethanol, our No. E455-0, (35 ml) and ether (20 ml) are added to a solution of potassium hydroxide (6 g) in water (10 ml). This solution is placed in a 100 ml long-necked distilling flask fitted with dropping funnel, efficient condenser, and water bath at 70°. As the distillation of the ether starts, a solution of 21.5 g of Diazald® in about 200 ml of ether is added through the dropping funnel over 20 minutes. During the distillation the flask is occasionally shaken vigorously. The ethereal diazomethane is collected in the same manner as in (1). The yield is identical.

1. H. Biltz and H. Paetzold, *Ber.* **55**, 1069, (1922)  
H. Meerwein and W. Burneleit, *ibid.* **61**, 1840, (1928)  
S. M. Gerber and D. Y. Curtin, *J. Am. Chem. Soc.* **71**, 1499 (1949)  
F. Weygand and K. D. Kirchner, *Z. angew. Chem.* **64**, 203 (1952)  
A. Mustafa, *J. Chem. Soc.* **1951**, 1369
2. B. Eistert, *Z. angew. Chem.* **61**, 185 (1949)
3. J. Herzog and J. Tichatschek, *Ber.* **39**, 268, 1557 (1906)  
H. Biltz, *ibid.* **64**, 1146, (1931)  
B. Eistert, F. Weygand and E. Csendes, *ibid.* **84**, 745, (1951)  
J. C. Sheehan and P. T. Izzo, *J. Am. Chem. Soc.* **71**, 4059, (1949)

**PRICE:** 100 g.—\$6.00 1 Kg.—\$45.00 10 Kg.—\$35.00 per Kg. 100 lb.—\$14.00 per lb

In addition to Diazald®, we list the following precursors for diazomethane:  
D15,558-6 N,N'-Dimethyl-N,N'-dinitrosoterephthalamide, 70% in mineral oil  
12,994-1 N-Methyl-N'-nitro-N-nitrosoguanidine

Write for our latest catalog



IN THE U.S.A.

**Aldrich Chemical  
Company, Inc.**

2371 NORTH 30th STREET  
MILWAUKEE, WISCONSIN 53210

IN GREAT BRITAIN

**Ralph N. Emanuel Ltd.**

264 Water Road  
Alperton, Middlesex

Tel: 01-998 4414



Printed in Great Britain by  
Spottiswoode, Ballantyne & Co. Ltd., London and Colchester