NEW REAGENT FOR AMINO ACIDS AND PEPTIDES

PICRYL SULFONIC ACID (2, 4, 6 Trinitrobenzene Sulphonic Acid) reacts specifically with primary amines, amino acids and peptides. Extinction coefficients of the products run from 0.98 to 1.12 x 10^4 for amino acids at a final concentration of N.

This new reagent proved advantageous in the assay of peptides due to similarity of color intensity among various peptides. Trinitrophenyl peptides derivative can be split easily after assay of chromatographic effluent with ammonia.

For example: 1.0 ml of amino acid or peptide (0.01 to 0.08 mMol), 1.0 ml of 4% NaHCO_3, 1.0 ml of 0.1% picryl sulfonic acid is kept in dark for two hours at 40°C; acidified with N HCl and optical density measured at 340 mu. (1).

SPECIFIC STAIN FOR SH GROUPS IN TISSUES

MERCURY ORANGE (1, (4 Chloromercuri Phenylazo) 2 Naphthol Red Sulphydryl Reagent). Bennett reported that Mercury Orange is specific for attachment solely to SH groups in tissues (1) (2).

The tissue was fixed in trichloracetic acid, dehydrated in alcohol or prepared by freeze substitution. It was then teased into small fragments. Mercury orange (red sulphydryl reagent) (RSR) was employed as a saturated solution in solvent.

Using this standard, Bennett located SH groups in regions previously not known to contain them, such as nerve cell bodies, in retinal rods and in capillary endothelium.

After testing a number of reagents, Mauri, Vaccari and Kaderavek concluded that only RSR procedure was sufficiently sensitive and specific for thiols in tissues (3).

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AUTOMATED NITROGEN ANALYZERS
for micro samples; for larger samples

For Micro Samples
Now in use in hundreds of laboratories, the automated Coleman Model 29 Nitrogen Analyzer is providing rapid, exact results for an almost unlimited range of materials.

From foods to fertilizers, from plastics to petroleum derivatives, from biological materials to organic intermediates, the instrument is supplementing or replacing both the manual Dumas and the Kjeldahl methods.

A special extraction technique, announced in a recent issue of ANALYTICAL CHEMISTRY, permits the instrument to be used for trace analysis with materials containing as little as 20 ppm nitrogen.

Operation of the instrument is simple. The operator is required merely to weigh and install the sample, to actuate the instrument, and 8 minutes later, to read and record nitrogen volume from a digital counter.

Thus, an analyst without extensive training in microchemistry can produce excellent results in both routine investigations and in research.

Condensed Specifications:
- Sample: any material that pyrolyzes at temperatures up to 1000° C.
- Sample size: from 5 to 50 milligrams, generally.
- Operating cycle: 8 minutes.
- Accuracy: results correspond to theory ±0.2% nitrogen.
- Readout: digital counter in microliters.

Ask for Bulletin SB-291

For Larger Samples
Specially designed to meet requirements of materials that require extensive sample preparation before a representative sample can be obtained, the Coleman Model 29A accepts samples up to 50 milligrams. Even larger samples of inorganic materials are analyzed without difficulty.

The instrument is finding wide application in laboratories working with such diverse materials as foods, feeds, grains, soils, fertilizers, milk products, and biological materials.

To accept the larger samples, the instrument incorporates an expanded combustion system, extended combustion cycle, and a larger, modified nitrometer for measurement of the greater volumes of nitrogen. The measurement operation is speeded by a reversible electric motor in the precision syringe-and-micrometer screw adjustment.

The Model 29A minimizes the work formerly required in preparing samples of non-homogeneous materials for microanalysis.

Condensed Specifications:
- Sample: any material that pyrolyzes at temperatures up to 1000° C.
- Sample size: 50 up to 500 milligrams; up to one gram or more for inorganic materials.
- Operating cycle: 12 minutes.
- Accuracy: results correspond to theory ±0.2% nitrogen.
- Readout: motor-driven digital counter.

Ask for Bulletin SB-291

COLEMAN INSTRUMENTS CORPORATION • MAYWOOD, ILLINOIS 60154
AUTOMATIC EXTERNAL STANDARDIZATION—In liquid scintillation counting, the most accurate quench determinations require that each sample be counted twice...with and without a known standard. Originally, this involved the addition of carefully measured amounts of an internal standard. Now, a new Packard development automatically introduces an external gamma standard into the counting chamber immediately after each sample count is recorded. The tedious and time-consuming addition of internal standards is no longer necessary, and the samples remain unaltered for further counting if desired.

The small sealed gamma standard used in Tri-Carb Spectrometers is transported rapidly and reliably by means of a pneumatic tube between a well-shielded, remote storage location and a precisely reproducible position in the counting chamber. It provides gamma radiation with energies well above those of the beta emitters commonly counted in liquid scintillation samples. When positioned adjacent to the counting vial, it generates a Compton electron spectrum in the sample and produces a light output that is affected by quenching substances in essentially the same way as the light produced by beta particles from the sample isotopes.

By adjusting the Tri-Carb Spectrometer to record the energetic portion of the Compton spectrum in one channel, sample counting efficiencies may be determined directly from curves such as those shown in Figures 1, 2 and 3. This method is entirely independent of the radioactivity of the samples, and good precision is obtained with only one-minute counts of the relatively high activity gamma standard regardless of the activity level of the sample.

Automatic External Standardization is standard on all 4000 Series Tri-Carb Spectrometers, and optional on most 3000 Series instruments. Furthermore, in line with Packard's policy of providing new features for existing instruments wherever possible, Automatic External Standardization is also available as a field modification for most 3000 Series Spectrometers.

CHANNELS RATIO—When sample activity is reasonably high and when quenching is not too severe, the Channels Ratio method may be used to determine counting efficiencies. This technique utilizes the radioactivity of the sample itself for determination of the degree of quenching. The change in spectral shape that results when colored or chemical quenching substances are present in a sample is measured by the change in ratio of the net counts in two channels of pulse height analysis selected to span certain portions of the spectrum. These ratios may be directly correlated with counting efficiencies of samples as shown by the curves in Figures 4 and 5.

Various models of 3000 and 4000 Series Tri-Carb Spectrometers provide calculators or true electronic digital computers programmed to present, in addition to total net counts and net count rate for each channel, all of the possible channel ratios.

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AREA CODE 312 • 969-6000
a broad range of fields in which aerosols play a role. The present edition is an entirely new and superior translation done by R. E. Daisley and Marina Fuchs under supervision of C. N. Davies. In preparing this revision, the author has added much new material throughout the book, bringing it up to date as of 1960 and increasing by over 50 percent the total number of useful bibliographical references.

For those who are not familiar with the 1958 translation, it may be briefly noted that Fuchs has assembled and critically evaluated almost all that is known about aerosol "mechanics." He gives a very detailed treatment of the dynamics of motion of aerosol particles and discusses in definitive manner such topics as Brownian motion, diffusion, coagulation, and dispersion of aerosols. The great value of the book is that it not only brings non-Russian readers into touch with the extensive Russian work in the field of aerosol physics, but also gives them the considerable benefit of Fuchs' expert discussions of all important work done in this field throughout the world. Both basic principles and scientific and industrial applications are treated. The author and his translators deserve high praise for their work.

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Geography


Until this past year there was a paucity of college textbooks dealing with the geography of Africa. Recently, however, the importunities of the publishers' representatives appear to have been answered and, from a market view, possibly answered too well. Three new books have been published, and one of the two standard texts has been revised.

All of the authors of Africa and the Islands have had teaching and research experience in Africa. Harrison Church, the senior author, contributed the chapters that deal with former French West and Equatorial Africa and with Portuguese Africa. John I. Clarke wrote the chapters on north and northeast Africa. P. J. H. Clarke covered East Africa and H. J. R. Henderson southern Africa.

There is an introductory section, about a quarter of the book, which deals with the history, physical background, peoples, and modes of life of the continent. These and other topics are explored in greater detail in the chapters on specific countries.

Throughout the book human settlement and economic activities in Africa are emphasized. Settlement by Africans, Asians, and Europeans is treated, with appropriate emphasis on each. The often startling juxtaposition, which one can see in Africa, of subsistence activities with sophisticated cash-crop agriculture, or with manufacturing, is reflected. Much of the material mined from professional journals and from the first-hand research of the authors has not previously appeared in textbooks. Its inclusion is helpful. In this respect, the chapters by John I. Clarke have special merit.

The authors demonstrate a familiarity with the areas about which they have written, and with the professional literature concerning these areas. The result is a work with depth, a basic requisite of a sound textbook.

Dudley Stamp's Africa: A Study in Tropical Development was first published in 1953 and has been a useful textbook for a decade. One of its merits has been the emphasis placed on problems of human settlement in tropical Africa. There is discussion of subtleties of tropical climate and soils, of diseases of man and livestock, and of transport. This occupies a third of the book; the remainder is the customary country by country description and discussion.

The format of the second edition is slightly larger than that of the first, the printing of the photographic illustrations is better, and the text is remarkably little changed. Bibliographies have been updated, and the changes made necessary by the altered political status of nations has been added to existing chapters. There is a short additional chapter entitled "Africa and the world," which actually is concerned with Africa and world trade.

Some materials archaic at the time of the first edition and some errors of fact have been carried over unchanged into the new edition. The stations used to illustrate the different climatic regions were very carelessly chosen—Alexandria, Egypt, is in no sense in a tropical savanna area and Nairobi, Kenya, is not properly a tropical rain forest station (as Stamp will well remember if he has ever spent a chilling August or September in Nairobi). This new edition is useful, even though the opportunities offered by revision were not utilized.

Walter Deshler
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New Books

Mathematics, Physical Sciences, and Engineering


The JLC-01, manufactured by Japan Electron Optics Laboratory Co., Ltd. (JEOL) is similar to conventional automatic recording liquid column chromatographs — except for one important difference. Heat evolved during the separation process in the column system is measured by a sensitive, stable detector. Consequently, elution of any sample can be observed and be recorded automatically by detecting absorption-adsorption reaction, ion exchange reaction or partition reaction arising at the bottom of the column system. Sensitivity of 0.1 micromole is readily obtainable. The JEOL Universal Automatic Recording Liquid Column Chromatograph provides several unique advantages. Samples previously impossible to detect can now be analyzed. Color reagents are not required permitting non-destructive, economical detection of the sample and fractionation of the eluted sample. Efficient, reliable design and compact construction enable easy, convenient and dependable operation. And, JEOL has established a complete domestic servicing network to assure continuous trouble-free service. Complete technical data on the Universal Automatic Recording Liquid Column Chromatograph as well as an informative paper on the theory of this principle of chromatography is available. Please write JEOLCO. (U.S.A.), Inc., 461 Riverside Avenue, Medford 55, Massachusetts, phone 396-6241, area code 617.

20 NOVEMBER 1964
On the third day Jonathan Lanman (State University of New York, Downstate Medical Center) traced the ontogeny and phylogeny of immunologic responsiveness. The results of his grafting experiments in pregnant animals were discussed in terms of prevalent theories to explain the lack of rejection of the physiologic placental "homograft." The work of Kalmutz on production of antibody by the embryonic opossum was described by Sharman. Suggestions for newer immunologic approaches to the prevention of erythroblastosis were made, based on the differential permeability of the placenta to various γ-globulins. Most of the data indicated that a physical break in the placental "barrier" was required to initiate the events culminating in clinical erythroblastosis. On the final afternoon, Jack Pritchard (Southwestern Medical School) outlined the major topics covered during the preceding three days.

The conference was supported by a grant from the National Institute of Child Health and Human Development. A complete transcript of the proceedings is scheduled for publication prior to next year's meeting. The goals of this series of conferences over the next four years include discussion of the placental phase of intrauterine development, the birth process, and environmental and social factors concerned with fetal homeostasis.

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Forthcoming Events

November


