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Sargent Constant Temperature Bath

The 0.01° C. Sargent Constant Temperature Water Bath, which is employed in many laboratories throughout the world where a precise, reliable thermostat is required, is now being supplied with an improved relay unit and heating system. The central heating and circulating unit of the bath is now equipped with three cylindrical heating elements rated at 200, 300 and 400 watts respectively. The 200 watt heater is controlled by the No. 81835 mercurial thermoregulator through a thyratron tube and saturable core reactor in the relay unit. (The use of a saturable core reactor obviates the difficulties commonly encountered with mechanical relaying systems such as pitted contacts, broken moving parts and freezing.) By means of a control mounted on the panel of the relay the output of this heater can be varied from the full 200 watts to approximately 60 watts, thus permitting such adjustment of the heater output that positive overshooting of the regulatory temperature is minimized. With the improved relay system this bath can be adjusted to a precision of ±.005° C. when operating in the vicinity of 25° C.

An autotransformer, adjusted by means of a knob on the relay unit panel, permits the setting of the 300 watt heater so that heat loss from the bath is almost compensated and negative overshoot is reduced to a negligible quantity.

The 400 watt heater may be used to quickly raise the bath temperature to the desired operating level or, in the case where sacrifice of some precision of regulation is of no consequence, to permit operation of the bath at temperatures above 60° C.

In addition, the relay unit is equipped with a master switch, a switch for each heater and a pilot light to indicate that the circuit to the 200 watt heater is closed. Maximum power consumption 1100 watts.

S-84805 WATER BATH—Constant Temperature, 0.01° C., Sargent. Complete with Pyrex jar, 16 inches in diameter and 10 inches in height; central heating and circulating unit; constant level device; cooling coil; No. 81835 thermoregulator and relay unit with cord and plug for connection to standard outlets. For operation from 115 volt 50/60 cycle circuits **$300.00**

S-81991 TUBE—Thyratron, Type 2050. Each ..... **$ 4.40**

S-81992 LAMP—Neon Pilot Light. Each.... **$ 1.00**

S-84845 VESSEL—Water Bath Jar, PYREX Brand Glass. Each..... **$44.00**

SARGENT *SCIENTIFIC LABORATORY INSTRUMENTS • APPARATUS • SUPPLIES • CHEMICALS*

E. H. SARGENT & COMPANY, 4647 W. FOSTER AVE., CHICAGO 30, ILLINOIS
MICHIGAN DIVISION, 8560 WEST CHICAGO AVENUE, DETROIT 4, MICHIGAN
SOUTHWESTERN DIVISION, 5915 PEELER STREET, DALLAS 35, TEXAS
SOUTHEASTERN DIVISION, 3125 SEVENTH AVE., N., BIRMINGHAM 4, ALA.

Kodak reports on:

film for cases where no other film will do . . . cellulose acetate phthalate in the tummy . . . 25 years in the commercial plastics business

For your own good

It is now possible to walk up to an ordinary film counter and buy a roll of 120 or 620 roll-film that is just too fast for your own good. We do *not* recommend the new *Kodak Royal-X Pan Film*, except for special cases involving very poor light conditions, very high shutter speeds, or very small lens openings. Processing it by current commercial photofinishing techniques will lead to unsatisfactory results; instead, one must follow the special processing instructions packed with the film. Measured by the official ASA method, the Exposure Index is 650, but we think you will get along better handling it on the assumption of a 1600 exposure index.

17 years have gone by

The great Ivan Pavlov—he of the salivating dogs that you learned about in Psychology 1—did more than found behaviorism. By shedding illumination into the dark workings of the alimentary canal, the old boy lit the light that set off a chain of more than 100 patents on preparations that would get medicines safely through the stomach and on into the intestine. Each shines forth, lives out its allotted legal span of 17 years with more or less success, expires, and becomes part of the art that anyone skilled in the art of pharmacy may freely practice.

This year expiration befell U. S. 2,196,768, one of the more successful of them. It belonged to us, of all people.

In the dull monotone affected by the patent bar, this document drones on and on about "a medicament surrounded by an enteric film or layer of a cellulose derivative which contains a dicarboxylic acid radicle [*sic*] and which contains free carboxyl groups . . . " etc., etc., etc. In Examples VII and VIII and Claim 10 appears cellulose acetate-phthalate. That was it. That is our baby.

Reports in the pharmaceutical journals over the years on experiments to compare the properties of available enteric coating materials usually wind up reading like testimonials for CAP. Well over a billion doses of medicine coated with CAP have been swallowed. That may not be so many for 17 years, but it isn't bad either.

The reason CAP has been able to do mankind a little good is that it's just extremely resistant to gastric action, most susceptible to the hydrolytic influence of intestinal esterases, and quite independent of the assumption that the contents of the human upper intestine are reliably alkaline. Also, of the controversial assumption that the stomach empties at a reliable rate. Tablets coated with CAP have shown no signs of disintegration after seven days in a continuously agitated artificial gastric juice. In the same investigation in simulated intestinal juice at pH 6.9, rupture took place in 70 to 75 minutes, while at pH 8.5 all tablets disintegrated within 50 minutes.

The bill for the cellulose ester research that led to CAP has been paid. Now if you want to make an enteric-coated medicament with it, your lawyers can forget about our lawyers. All we can do is hope you will buy Eastman *Cellulose Acetate Phthalate, wherein about half of the original glucose hydroxyl groups are acetylated and about a quarter are phthalylated with one of the two carboxyls of phthalic acid. It is sold by Distillation Products Industries, Rochester 3, N. Y. (Division of Eastman Kodak Company) and looks like this:*

Hooray!

This fall we celebrate the 25th anniversary of our entry into commercial plastics (as distinguished from plastics for photographic film base, which we have been in since 1889). Hooray.

If you share our elation over the occasion, you will permit us to send you a plastic (*Tenite Butyrate*) commemorative medallion depicting one of the first U. S. injection molding machines. This heraldic device marks the historic fact that injection molding of plastics became an art of mankind through our exploitation of the discovery that cellulose acetate, mixed with a plasticizer, could be squirted hot. Hooray!

For sophisticates who look beyond butyrate medallions for their excitement, our plastics story has a slant that even they may find stimulating. That's the part where we mention psychophysics, profess our disdain for color standards in the plastics trade, and irritate our competitors by enthusiastically pushing the idea of custom colors.

The joy that the human race takes in its color vision has brought us prosperity.

Long live *Kodachrome*, *Kodacolor*, *Ektachrome*, *Ektacolor*, and *Eastman Color Films!* Also *Chromspun Acetate Yarn!*

The chromaticity diagram of the International Commission on Illumination—long may it wave!

Long live those gallant fellows of ours who spend their 8-to-5 lives exploring its mathematical properties and conclude that the normal eye is capable of about two million distinguishably different color sensations, half of which are possible as colors of actual objects!

Long live the independently wealthy automotive genius who decides just how much difference from any of the 38,000 extant colors in sturdy *Tenite Acetate*, extra tough *Tenite Butyrate*, and warmly soft *Tenite Polyethylene* it will take to create a certain effect in your wife's mind when she sneaks a peek into the 1959 model while waiting around in the showroom for the service department to make its estimate on overhauling the old heap!

For a reprint of a very recent paper of ours that tells how to build an electronic digital tristimulus integrator that attaches to a recording spectrophotometer and reads off ICI co-ordinates for any color, write Eastman Kodak Company, Research Laboratories, Rochester 4, N. Y. For the commemorative medallion, or for any conceivable color effect in Tenite Plastics, *which are, frankly, the aristocratic family of the plastics age, write Eastman Chemical Products, Inc., Kingsport, Tenn. (Subsidiary of Eastman Kodak Company).*

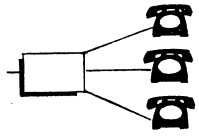
Kodak
TRADEMARK

This is another advertisement where Eastman Kodak Company probes at random for mutual interests and occasionally a little revenue from those whose work has something to do with science

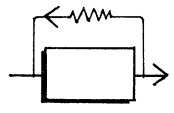
Pacemakers in the technology of our electronic age

Certain discoveries, inventions and developments of Bell Telephone Laboratories have been truly epochal in their effect upon the technology of our time. Each has come out of a single quest—a search for ways to make telephony ever better. But many have opened the way to exciting advances in TV, movies, radio, horology, astronomy. Here are ten of Bell Laboratories' contributions to the modern world.

Electronic amplifier. First high-vacuum electronic amplifier. Made possible long distance telephony and then opened the way to radio broadcasting.

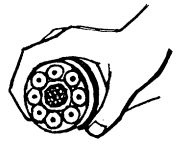


Wave filter. Precisely separates bands of frequencies. Provided major key to economical sharing of the same wires by many voices or radio programs. Indispensable control tool in radio, television and radar.



Negative feedback amplifier. Provides distortionless and stable amplification. Made possible the enormous, precisely controlled amplification needed in long distance telephone calls. The principle is now basic in high-quality amplifiers for radio, TV and high-fidelity reproduction.

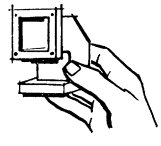
Quartz crystal. Standard super-accurate quartz crystal oscillator developed for frequency controls in radio telephony. Has also become the standard control for clocks in world's astronomical laboratories.



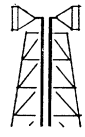
Coaxial cable system. Hollow tube with a central conductor was developed to transmit hundreds of voices simultaneously. Now also provides long distance carrier for TV in partnership with microwave beams.

Transistor. Tiny solid-state device uses extremely small amounts of power to amplify signals. Makes possible electronic telephone switching and much smaller hearing aids, radios, TV sets and electronic computers.

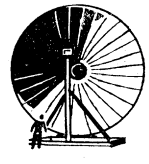
Dial system "brain and memory." Takes over your call and sees that you are connected in the best and quickest way. Newest example: Direct Distance Dialing from home telephones to any part of the nation.



Waveguide. Hollow conductor transmits high-frequency waves. From this came the "pipe" circuits that are essential to radar and very short-wave radio communications.



Microwaves. Bell Laboratories developed long distance microwave transmission. It operates by focusing radio beams from station to station, carries cross-country telephony and TV.



Radio astronomy. This great new science began in the study of radio interference at Bell Laboratories . . . with the tremendous discovery that radio waves emanate from the stars.

BELL TELEPHONE LABORATORIES

WORLD CENTER OF COMMUNICATIONS RESEARCH AND DEVELOPMENT

actions that occur in the hydrogen bomb is quite incorrect. He makes no distinction between the process of fission (A-bomb) and that of fusion (H-bomb) and there is, in fact, no indication that he even realizes that there is a difference.

The other feature of Rowland's book that disturbs me is the price. Eve's book is handsomely bound, printed on 451 large pages of high-grade paper, with 17 plates of photographs, plus the frontispiece, and six line drawings. Rowland's book, which contains not more than one-fourth as many words, is printed on 160 small pages of ordinary paper, with three line drawings and no photographs, except for the frontispiece. Yet Eve's book sold in 1939, and still does sell, for $5, whereas Rowland's book sells at $4.75—surely a glaring example of the effects of inflation, if nothing more. But it is an interesting and reliably written book, provided that the reader overlooks those last 11 misleading pages.

RAYMOND T. BIRGE
University of California

Progress in the Chemistry of Organic Natural Products. vol. 13. L. Zechmeister, Ed. Springer, Vienna, 1956. 624 pp. Illus. $25.60.

The timely coverage of important developments in the field of natural products has been maintained in this 13th volume of the Zechmeister series. The various topics are discussed with competence and clarity by the foremost research workers in the field, and a multitude of formulas, conveying structures and reaction schemes, are presented.

The first chapter, by A. R. H Cole, deals with the application of infrared spectroscopy to the elucidation of the structure of natural products, with primary emphasis on steroids and terpenoids. A short discussion is also devoted to the polyenes. The description of the various instruments and sampling techniques could well have been omitted, since they have been considered in various other books.

O. T. Schmidt discusses the progress of the chemistry of tannins since 1929 in the second chapter. The third chapter, by C. Tamm, deals with the progress of research in the field of cardioactive glycosides. The isolation and properties of the various glycosides are described. In the discussion of structure determinations, degradation reactions and structures of aglycones are emphasized.

The recognition of the importance of naturally occurring tropolones and troponoids is well treated in the fourth chapter, by T. Nozoe. A description of structure determination of natural tropolones is given, and general methods for the synthesis of various types of troponoids are outlined.

Alkaloids that are related to anthranilic acids are reviewed by J. R. Price in the fifth chapter. Quinoline, acridine, furoquinoline, quinazoline, and quindoline alkaloids are included here.

The final two chapters, by A. Chatterjee, with S. C. Pakrashi and G. Werner, and by W. Grassman, with E. Wünch, deal, respectively, with recent developments in the chemistry and pharmacology of *Rauwolfia* alkaloids and with the syntheses of peptides.

HENRY FEUER
Purdue University

New Books

The Exploration of the Colorado River. John Wesley Powell. University of Chicago Press, Chicago, Ill., 1957 (abridged from ed. 1, 1875). 159 pp. $3.75.

The Chemistry of Plants. Erston V. Miller. Reinhold, New York; Chapman & Hall, London, 1957. 181 pp. $4.75.

Physiology of the Nervous System. E. Geoffrey Walsh. With chapters on somatic sensibility and the applied physiology of pain by John Marshall. Longmans, Green, New York, 1957. 579 pp. 50s.

Précis de Biologie Humaine. Les bases organiques du comportement et de la pensée. Propédeutique biologique des étudiants en psychologie et sciences humaines. Paul Chauchard. Presses Universitaires de France, Paris, 1957. 415 pp. Paper, F. 1400.

Précis de Biologie Animale. M. Aron and P. Grassé. Masson, Paris, 1957. 1421 pp. Cloth, 1 vol., F. 5900; paper, 2 vol., F. 5300.

Physics. Erich Hausmann and Edgar P. Slack. Van Nostrand, Princeton, N.J., ed. 4, 1957. 732 pp. $8.

A Monograph of the Immature Stages of African Timber Beetles. E. A. J. Duffy. British Museum (Natural History), London, 1957. 345 pp. £5.5s.

Heat Transfer and Fluid Mechanics Institute, 1957. Preprints of papers. Held at California Institute of Technology, Pasadena, 19–21 June. Stanford University Press, Stanford, Calif., 1957. 446 pp. $8.50.

Evolution of the Veterinary Art. A narrative account to 1850. J. F. Smithcors. Veterinary Medicine Publishing Co., Kansas City, Mo., 1957. 417 pp.

Seminar on the Decline of Materialism. Sponsored by the Laymen's Movement for a Christian world, 10–11 Nov. 1956, Wainwright House, Milton Point, Rye, N.Y. Laymen's Movement for a Christian World, 347 Madison Ave., New York 17, 1957. 108 pp.

Medical Department, United States Army, Surgery in World War II. Orthopedic Surgery in the Mediterranean Theater of Operations. John B. Coates, Jr., Ed.-in-Chief. Office of the Surgeon General, Department of the Army, Washington, D.C., 1957 (order from Supt. of Documents, GPO, Washington 25). 388 pp. $4.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

West African Maize Research Unit, Second Annual Report. 1954. West African Research Unit, Moor Plantation, Ibadan, Nigeria, 1957. 51 pp. 5s.

Study Group on the Ecology of Intermediate Snail Hosts of Bilharziasis, Report. WHO Tech. Rept. Series No. 120. 38 pp. $0.30. *Study Group on Atherosclerosis and Ischaemic Heart Disease, Report.* WHO Tech. Rept. Series No. 117. 40 pp. $0.30. *The Work of WHO, 1956.* Official records of the World Health Organization, No. 75. Annual report of the Director-General to the World Health Assembly and to the United Nations. 233 pp. $2. World Health Organization, Geneva, 1957.

Home Study Blue Book. Homer Kempfer, Ed. National Home Study Council, Washington, ed. 19, 1957. 32 pp.

Energy Transfer in Polyacene Solid Solutions. A guide to the literature to the end of 1956. NRC No. 4320. F. R. Lipsett. Radio and Electrical Engineering Div., National Research Council of Canada, Ottawa, 1957. 64 pp. $0.50.

A Spectacular Waterfowl Migration through Central North America. Biological Notes No. 36. Frank C. Bellrose. State Natural History Survey Div., Urbana, Ill., 1957. 23 pp.

Individual Differences in Night-Vision Efficiency. Medical Research Council Special Report Series No. 294. M. H. Pirenne, F. H. C. Marriott and E. F. O'Doherty (with a section on *The Frequency of Seeing at Low Illumination* by H. K. Hartline and P. R. McDonald). Her Majesty's Stationery Office, London, 1957. 83 pp. 8s.

Stress; Experimental Psychology; Child Psychiatry. Psychiatric Research Reports, 7. Jacques S. Gottlieb, Chairman, Editorial Committee. American Psychiatric Assoc., Washington 6, 1957. 88 pp. $2.

The Nature and Transmission of the Genetic and Cultural Characteristics of Human Populations. Papers presented at the 1956 annual conference of the Milbank Memorial Fund. Milbank Memorial Fund, New York, 1957. 143 pp. $1.

Abstracts of Research Financed by the Petroleum Research Fund, 1954–1956. Administered by the American Chemical Society. Petroleum Research Fund, Washington, 1957 (order from Secretary, Petroleum Research Fund Advisory Board, 1155 16 St., NW, Washington 6). 34 pp.

Proceedings of the Symposium on Rauwolfia. Held under the auspices of the Pharmaceuticals and Drugs Committee of the Council of Scientific and Industrial Research on 17–19 October 1955 at the All-India Institute of Hygiene and Public Health, Calcutta. Reprinted from *The Indian Journal of Pharmacy,* vol. XVIII, Nos. 4–7, 1956. Popular Press, Bombay, 1957. 148 pp.

Symposium on Techniques in Polymer Science. With an introduction by C. H. Bamford. Lectures, Monograph and Reports, 1956, No. 5. Royal Institute of Chemistry, London, 1957. 79 pp. $1.15.