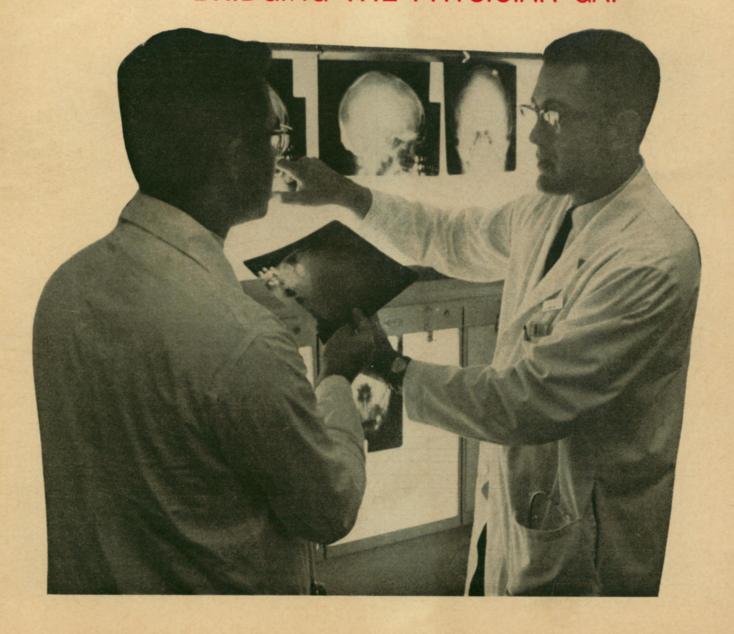
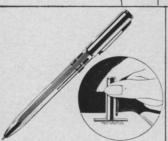
science news 25 January 1969 **25 c** vol. 95 no. 4, pp. 81-104

February Skies
Letter from Tokyo
5,000-year time capsule

BRIDGING THE PHYSICIAN GAP





"NAME DROPPER" PEN

is the cleverest and most useful pen you can own. 1st—a four-color ballpoint pen. 2nd—cap contains a complete stamp (with stamp pad), for full name and address (with Zip). For addressing envelopes, marking books, checks, etc. With stamp, ink, extra stamp pad and 4

refills. \$6.95 Deluxe Goldplated Model \$9.95 (send full name and address stamp)



ZOOM TELESCOPE

has smooth 12x to 40x power zooming at the touch of a button, with constant focus and instant stop at intermediate magnifications. Outstanding coated optics, excellent light gain. Field of 141' at 1,000 yds. Powered by 2 penlight bat-teries, with lockable panning head, extendable table-top tripod, pistolgrip and vinyl case. Just \$49.95



TRAVEL RADIO/CLOCK

set by your bedside will let you enjoy full range AM radio and get you places on time as well. Doze to your favorite program . . . it shuts off within an hour. Soft tunes or its bell alarm will rouse you in the a.m. Felt-lined case is a perfect night valet for your jewelry, change etc. 6x4x2" compact case.

\$29.95



RANGE FINDER

You can measure distances from just a few inches to almost as far Just a few inches to almost as far as the eye can see, quickly and accurately with our Range Finder. Photographers use it for perfect focus, golfers to select the right club, yachtsmen to plot precise chart positions. Great for measuroract positions. Great for measuring rough terrain. Developed by Dr. Luis Alvarez, the inventor of Ground Approach Control System. Extremely useful and very simple to use. Reading in miles or yards. Our explusive. Our exclusive. \$19.50



WIND-UP SHAVER

Frees you of batteries, water, electricity and other paraphernalia. Just a quick wind-up and you get a smooth, fast, comfortable shave anywhere, anytime. In vinyl case. Keep one in your glove compartment. \$18.50

Also available: Modele Anatomique with see-thru clear plastic body so you can watch the action.

houanhillh

\$19.95

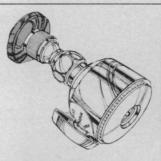


STOWA 316 DESK CLOCK

is a tiny, elegantly designed two-tone brass clock that will unobtru-sively grace any desk. 17-ruby movement, calendar window, sweep second hand. Angled for easy time-telling. Petite 13/4" diameter

\$35

nount



COUNTRY CLUB SHOWERHEAD

makes showering at home like going to a spal Provides full vol-ume of water, from invigorating needle-spray to a veritable waterfall. Non-clogging. Chromed over copper and nickel with 24k gold s. In gift \$21.95 finish. Installs in minutes. In box.



HOME FOOD SLICER

is for those who wish they could make sandwiches just like at the "deli." It's easy with this wonderful kitchen aid that slices raw, cooked or frozen food to any thickness. 6¼" stainless blade. Nonskid rubber feet. \$15.95

A FREE GIFT FOR YOU: our POCKET TOOL KIT (in shirt-pocket vinyl case) if your order (exclusive of post. & tax) is \$30 or more. OUR GUARANTEE: has no "ifs," "ands" or "buts." Simply return any item within 10 days if you are not delighted. All parts and workmanship are guaranteed one year.



IId TGT IIII 584 Washington St., San Francisco, 94111 (415) 9		
Quantity	Item	Ar

Calif. residents add 5% tax \$1.00 Postage and Insurance_

My check for this Total is enclosed_

ZIP_

NAME ADDRESS

☐ I am entitled to receive a FREE TOOL KIT.

SN-0125



G. P. K.

Our G.P.K. (Gentleman's Pocket Knife) is only 1/8" thin, but con-tains in its leatherette-sheathed body: knife, manicurer, screwdriv-er/bottle-opener and scissors. All forged of the finest steel. Elegant enough to be at home in a tux and enough to be at home in a tux, and useful enough for your tackle box. Arouse that Huck Finn in you and order yours today.

\$4.95



ELECTRIC SCISSORS

cut the heaviest or the finest material or paper quickly, exactly and effortlessly. Cut straight lines or ornate curves with ease. Battery operated to use anywhere. With batteries and vinyl case. \$5.95

science news®

OF THE WEEK

87 The interregnum budget

88 Science Foundation

. . . Defense

89 ... Atomic Energy Commission

... NASA

90 . . . National Institutes of Health

. . . Health care

. . . Transport and the cities 91 ... From satellites to mine safety
... Metrics, patents, weather

94 Behavioral Sciences: Stone Age tribe rediscovered; Black parents not committed to bussing; Pot grown for research; Psychiatrists out of place in court; By-standers act better alone

Earth Sciences: Another research ship on the way; Mock search four miles down; Training tower for mini-sub; Ocean bottom marker emplaced; 95 Map shows earthquake risks; Radiation measures moisture content of soil

Physical Sciences: Prediscovery observations of Uranus; New X-ray source; Computer index to compounds; Moving flame causes rotation; Clustering of pulsars more pronounced; Laser as a yardstick 96



102 Letter from Tokyo

IN SCIENCE FIELDS

97 Medicine: Helping the doctors

99 Astronomy: Three planets shine

84 Films of the Week

Letters to the Editor 84

100 Books of the Week

SCIENCE SERVICE

Institution for the Popularization of Science founded 1921; a non-profit corporation

Board of Trustees-Nominated by the American Association for the Advancement of Science: Athelstan F. Spilhaus, Franklin Institute; Wallace R. Brode (Treasurer), American Chemical Society, Washington, D. C.; Bowen C. Dees, University of Arizona. Nominated by the National Academy of Sciences: Henry Allen Moe, The Clark Foundation; Harlow Shapley, Harvard College Observatory; Allen V. Astin, National Bureau of Standards. Nominated by the National Research Council: Glenn T. Seaborg (President), U.S. Atomic Energy Commission: Leonard Carmichael, National Geographic Society; John R. Whinnery, University of California, Berkeley. Nominated by the Journalistic Profession: O. W. Riegel (Secretary), Washington and Lee University; Gordon B. Fister, Call-Chronicle Newspapers; Eugene Patterson, Atlanta Constitution. Nominated by the Edward W. Scripps Trust; John Troan, Pittsburgh Press; Ludwell Denny, Scripps-Howard Newspapers; Edward W. Scripps II (Vice President), Edward W. Scripps Trust.

Director: E. G. Sherburne Jr.; Assistant Director: Dorothy Schriver; Staff: Youth Division: Howard Weisbrod; Photography: Fremont Davis.



The inability of the nation's medical schools to accept enough qualified applicants is leaving a gap in medical care now being filled by a new kind of semi-doctor, the physician's assistant. p. 97 (Photo: Duke University)

A Science Service Publication Vol. 95/January 25, 1969/No. 4 Science News Letter @

Watson Davis, 1896-1967

Publisher: E. G. Sherburne Jr.

Editor: Warren Kornberg Managing Editor: Frank Sartwell Ass't. Managing Editor: Carl Behrens

DEPARTMENT EDITORS Aerospace: Jonathan Eberhart

Behavioral Sciences: Patricia McBroom Chemistry and Engineering: Edward Gross

Life Sciences: Barbara J. Culliton. Christopher Weathersbee

Medicine: Fave Marley

Nadine Clement

Physical Sciences and Astronomy: Ann Ewing, Dietrick E. Thomsen Illustrations: Marilyn Raleigh Production: Marilyn Binn New Ideas: Ruby Yoshioka **Books: Margit Friedrich** Assistant to the Editor:

Editorial Assistant: Marjory Scarlet

Advertising Director: Louis D. Young Circulation Manager: Marcia Nelson

"Monumental" —Saturday Review The most definitive, up-to-date one-volume science encyclopedia ever published

SCIENTIFIC ENCYCLOPEDIA

VAN NOSTRAND'S

Compare the new 4th edition of the famous VAN NOSTRAND'S SCIENTIFIC ENCYCLOPEDIA with its own giant predecessors. You'll find it's

BIGGER—by more than 400,000 words ■ MORE MODERN—with over 25,000 more definitions (a total of 125,000 in this edition) ■ MORE COMPLETE—by over 2,500 more entries ■ MORE GRAPHIC—by over 600 more illustrations (in fact, there are now over 2,000 illustrations including full-color plates!)

VAN NOSTRAND'S SCIENTIFIC ENCYCLOPEDIA has been recognized as the most comprehensive reference in its field since it was first published 30 years ago. And today, keeping up with the explosive growth of technical and scientific knowledge, it is the most valuable, useful one-volume source of science information available. The technological revolution of the past 10 years touches every aspect of your life, which makes a working understanding of science more vital to your success than ever before. And it makes this vastly enlarged 4th Edition of a great reference volume one of the most important investments any family can make.

Millions of facts—find information in seconds. Van Nostrand's Scientific Encyclopedia is actually an education in science—with every topic developed progressively, from a simple, "plain-talk" definition to a more technical, in-depth presentation of details. And, an exclusive system of cross-references helps you learn all about a particular subject—by giving you instant access to a wide range of supplementary information. You don't have to hunt for related topics; they are clearly pointed out to you (in bold-face type) in each of this new edition's 16,500 articles!

Today's research—Tomorrow's headlines. No science reference, no matter how extensive, can hope to serve scientist and student, technician and layman, unless it includes the very latest developments in science, industry and medicine. That's why, in this 4th Edition, you'll find full information on the latest advances in—

Plastics: including new methods in polymer science that enable us to "tailor-make" plastics to fit their properties to their uses;

Space Technology: including rocketry, space travel, moon shots and planetary exploration;

Computers: not just their electronics and operation, but also "software"—data processing, commercial applications, and systems engineering;

Mathematics: including the great shift in math teaching apparent even in the elementary classroom;

Biochemistry: recently discovered chemical structures and mechanisms, techniques and instruments; **Medicine:** the new electronic instruments, new approaches to mental diseases, organ transplants, new drugs, etc.

Plus virtually everything else that's topical in today's science, in such fields as topology; electrical engineering; solid state physics; hydro-dynamics; automatic control; genetics and heredity; guided missiles; oceanography; weather prediction; and much, much more.

Why you'll find it so useful. Covering everything scientific from A to Z, VAN NOSTRAND'S SCIENTIFIC ENCYCLOPEDIA is invaluable to casual newspaper readers and TV viewers, high school and college students, professionals in laboratories, businessmen in industry. The executive confronted by the challenge of computers . . . the physi-

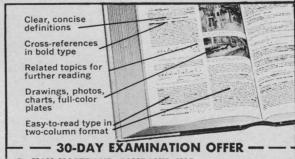
cian anxious to keep up with a specialty other than his own . . . the student researching a term paper . . . the lawyer with a case involving some facet of industrial technology . . . any reader intrigued by headlines about DNA and the genetic code . . . any parent who wants to give his children the best possible background for better grades in school—these are just some of the people who call on this outstanding one-volume sourcebook. When you receive your copy—at home, in the office, in the lab—browse through the pages at random and sample the topics that interest you. You'll soon realize how many times you'll be able to relate your own personal situation to the absorbing contents of this reference volume.

—browse through the pages at random and sample the topics that interest you. You'll soon realize how many times you'll be able to relate your own personal situation to the absorbing contents of this reference volume.

In addition, you can be absolutely sure of the authenticity and the practical value of each and every entry—because of the distinguished list of contributors to this 4th Edition. University professors from Yale, Ohio State, Princeton, NYU, Cambridge . . . research scientists from Eastman Kodak, RCA, and the Monsanto Chemical Company . . . authorities from coast-to-coast, and from England as well—every contributor and editor has made sure that fundamental principles, practical applications, and latest developments are presented in crystal-clear language—and with clear illustrations wherever possible. Furthermore, the VAN NOSTRAND name—one of the most distinguished imprints in science publishing for the past 100 years—is your guarantee of complete satisfaction.

Order today—using our Special Payment Plan. Because we

Order today—using our Special Payment Plan. Because we want you to examine Van Nostrann's Scientific Encyclopedia for yourself as quickly as possible, we will send you this giant \$42.75 one-volume science library on a guaranteed, no-risk basis. Here's how it works: Return the coupon below with a small good-will deposit of just \$8.75. Read and use the Encyclopedia for a full month without obligation. If you don't agree that this big, basic, lifetime reference belongs in your library. simply return the book in good condition and receive an immediate refund of your \$8.75. If you decide to keep the Encyclopedia, we will bill you for just \$8.50 monthly for the four following months (plus a nominal postage and shipping charge). Or, if you wish, send the full payment of \$42.75 with your order, and we pay all postage and handling costs—and you still get the same one-month return privilege, of course! Mail the coupon today.



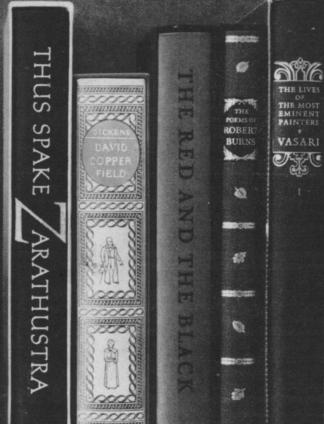
D. VAN NOSTRAND COMPANY, INC. 120 Alexander Street, Dept. TSN-2, Princeton, N. J. 08540

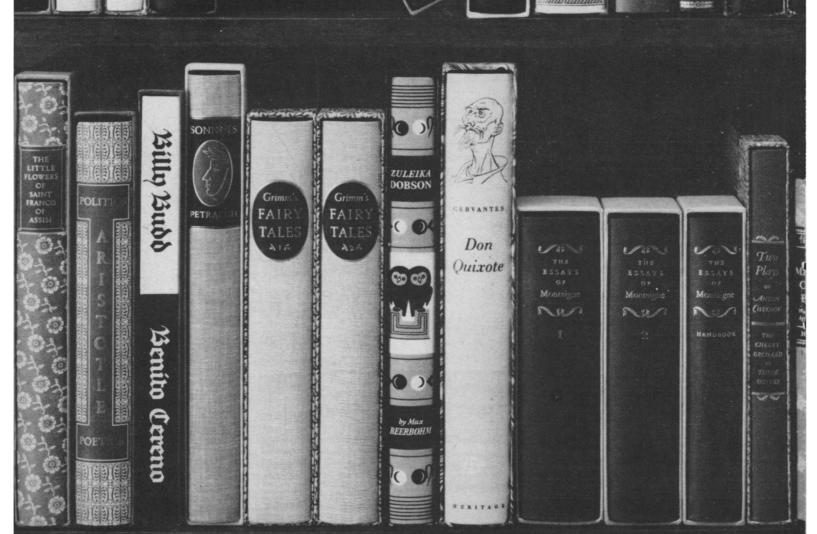
Please send me ______ copies of Van Nostrand's Scientic Encyclofedia, 4th Edition, for one month's examination under the Special Payment Plan. For each copy I order, I enclose \$8.75 herewith, and will remit \$8.50 per copy per month (plus postage) until the full payment of \$42.75 per copy is completed. I understand that if I am not satisfied, I may return the book (s) within 30 days and in saleable condition for a full refund of my down payment.

down payment.		
NAME		
ADDRESS		
CITY		
STATE	ZIP	
☐ SAVE! Enclose \$42.7 age. Same 30-day exam	5 with coupon, and publisher pays post- ination privilege; refund guaranteed.	

FOURTH EDITION

Actual size: 9" x 12"
2,008 pages • 4" thick!





notes from und

DOSTOEVSCO

BALZAC

Droll **St**orie

TALES OF THE GOLD RUSH

I

Welcome to the club

If you get pleasure simply from *holding* a beautiful book—we'd welcome you as a member of The Heritage Club.

And to provide a suitable welcome, we offer you one of the Club's most beautiful past selections: The Complete Plays of Shakespeare.

Our edition comes in three large volumes: the 14 Comedies, the 10 Histories, and the 13 Tragedies—37 plays in all.

The text is Peter Alexander's Tudor version, acclaimed for its purity and accuracy We sincerely believe, and many scholars agree with us, that Professor Alexander's readable text comes far closer to Shakespeare's original words than does any other printed text.

Three internationally famous book illustrators embellished the 3 volumes. For the Comedies, Edward Ardizzone contributed 29 color drawings, in the madcap spirit of Lear, Tenniel, and Sir Max Beerbohm. For the Histories, John Farleigh fashioned 20 two-color wood engravings, as evocative as ancient battle standards. And the eminent artist from Macbeth's own glens, Agnes Miller Parker, executed 28 brooding wood engravings for the Tragedies. (All Heritage Club books are illustrated by outstanding artists, such as Picasso, Ayrton, Artzybasheff.)

As with all of our books, the paper on which this set is printed has been chemically treated to assure a life of at least two centuries. And the staunch bindings are designed to fit the subject. All three Shakespeare volumes are half-bound in linen bearing a rose, lavender, and purple pattern on an ecru background—a design taken from the period wall decoration of a 400-year-old Tudor mansion where Shakespeare himself used to spend the night. The backstrip of each book is a sturdy natural buckram stamped pigment and gold leaf.

Our edition of Shakespeare's Complete Plays comes in three 6 x 9¾" volumes—substantial but light enough to hold comfortably on your lap. Each volume is individually boxed. There are 3,590 pages in all, luxuriously illustrated

Normally, as a member, you could purchase this three volume set as three separate selections for \$5.95 each or a total of \$17.85, plus postage. But if you mail the coupon below—you may have the entire set without cost,

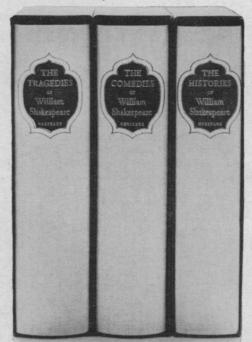
as a new member gift.

In months to come, you will have a choice of such remarkable volumes as Joyce's Portrait of the Artist as a Young Man, Cape Cod by Thoreau, Gone With the Wind, the Satyricon of Petronius, Wilde's Short Stories, and the Poems of Shakespeare. Each of the books will be designed and illustrated by an internationally famous artist, and so well made you will cherish each as a proud possession and sound investment.

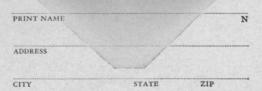
You're not bound by rigid contract to take any of these books. The Club gives you the option of substitutions from a backlist of more than fifty books in print. Each Club selection costs you only \$5.95, plus postage, even though, by any standard, you should expect to pay twice that amount or more.

If you have a taste for fine books, browsing through each volume of the Heritage Shakespeare will be a thrilling experience.

We believe it will also make you want to continue as a Heritage Club member. But we can only bid you welcome. The decision to remain with us is yours.



Please send me, as a new-member gift, the 3-volume set of Complete Plays of Shakespeare and reserve for me a 12-month trial membership in The Heritage Club. If I don't want to keep the 3-volume set, I will return it within 10 days and my membership reservation will be cancelled. Otherwise I'll keep the set and, from a prospectus you send me, I may then select the books I wish to receive during my trial membership. For each book I select, I will pay only \$5.95 plus postage.



The Heritage Club

207 WEST 25 STREET, NEW YORK, N.Y.10001