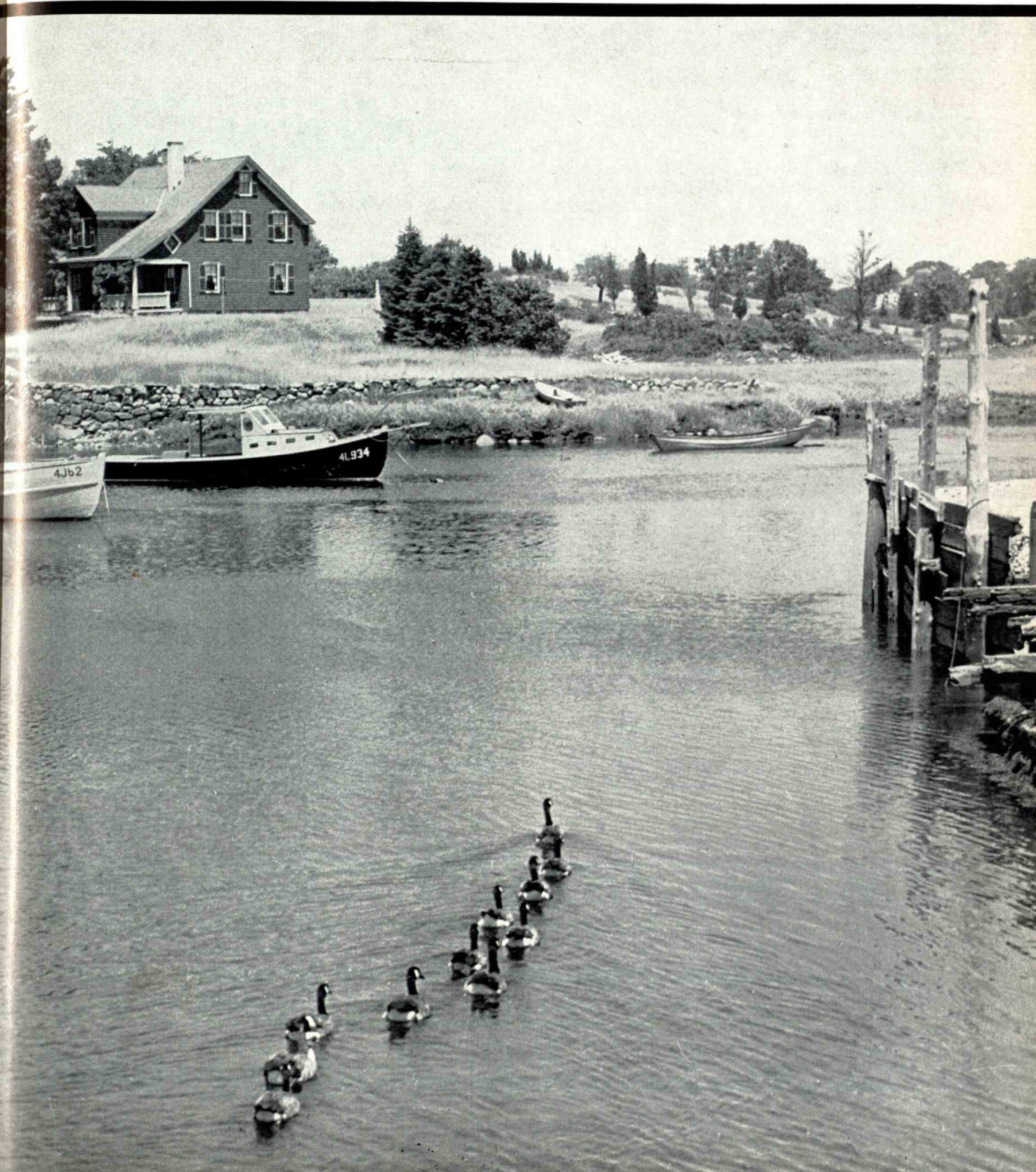


TECHNOLOGY

REVIEW

June 1958



Right off the Wire

A computer-controller system is said to be capable of landing 120 jet planes per hour. Human control can average no better than 40 per hour.

Dockside facilities at SIMPLEX' Submarine Cable Division in Newington, N. H. are extensive enough to continuously load two of the largest submarine cable ships simultaneously.

A new plant is reported to cut the manufacturing time of industrial carbon components from eight weeks to eight minutes.

A "building block" technique, using miniature plug-in units, makes it possible to build an electronic computer small enough to go on an office desk.

An iron-aluminum alloy has been made, the behavior of which indicates that there is a relationship between rusting and magnetism.

Some fruit trees have been found to ripen earlier after long exposure to gamma radiation.

At least one of the new "exotic" rocket fuels is being made in solid form and others are expected soon.

A patent has been issued for a radioactive "go-devil" (a device for cleaning pipe lines). If it sticks in a pipe it can be located with a Geiger counter.

It is estimated that malicious damage to street lamps costs New York City a quarter of a million dollars a year. A new plexiglas globe makes this sort of vandalism almost impossible.

Instead of the usual bracing and shoring, inflatable cushions are being used to wedge freight tightly in box cars.

One of the new guided missiles is launched from an automatic base which computes the location of the attacking object, calculates its speed and the proper point for meeting it. It also loads and fires the missile automatically.

A micro-porous synthetic material holds a liquid, such as an ink or lubricant, and gives it off at a controlled rate.

Damage to small delicate parts on a conveyor can be avoided by a new belt that uses permanent magnets to hold the pieces apart.

Glass-reinforced plastics can be strengthened by the use of a special new glass containing copper oxide.

Further information on these news items and on Simplex cable is available from any Simplex office. Please be specific in your requests.

A new wool-like synthetic fiber is water-repellent, quick-drying and less expensive than other synthetics.

A device for measuring the power output of a turbine involves an inner and an outer gear in constant mesh with free space between the teeth. This space is filled with oil on which the pressure can be measured.

Simplex Wire & Cable Co. was the first to adapt interlocked armor (CONDEX) for use with underground cable in 1924.

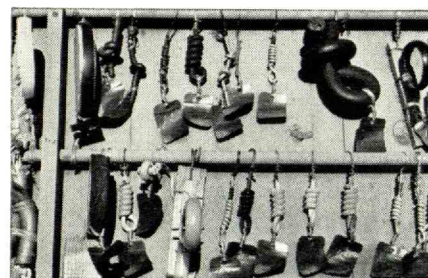
A logging company is using plastic nails to fasten logs together. They neither rust nor damage saw blades.

Paralyzed fingers can be made to move by means of tiny artificial muscles powered by a carbon dioxide cartridge.

Research conducted by two Simplex scientists in the early 1920's resulted in the first truly moisture-resistant rubber insulation. The isolation and removal of the proteins that are always present in natural rubber was the basis of the now famous ANHYDREX family of insulations.

Foamed aluminum is being made for use as a core in sandwich construction.

An electronic device checks the accuracy of aircraft guns without firing them.



Rooftop Laboratory

These cable samples, twisted and bent to exert maximum stress on insulations and jackets, are undergoing sun-crack endurance tests atop the Simplex plant at Cambridge. Many of these samples have been exposed to the elements for as long as fifteen years . . . and they haven't cracked yet. This is one example of the many punishing tests which Simplex insulating and jacketing compounds, such as Anhydrex, Thermoplex and polyethylene, are subjected to before they win final approval.

It's all part of a comprehensive system of quality control which has helped make Simplex the leader in cable research and manufacture.

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Linear Accelerometer
Type LA-500
Shown actual size.

LINEAR ACCELEROMETERS for Aircraft and Missiles

DESCRIPTIVE DATA

- **RANGE:** Up to ± 60 G full scale.
- **DAMPING RATIO:** 0.6 ± 0.2
(from -65°F. to $+175^{\circ}\text{F.}$).
- **LINEARITY:** 1 % of full scale.
- **PICKOFF:** Can be provided with
2 potentiometer pickoffs
(center taps optional).
- **SIZE:** $1\frac{7}{16}$ " dia., $3\frac{1}{4}$ " long.
- **WEIGHT:** 1 lb.

HONEYWELL LINEAR ACCELEROMETERS of the Type LA-500 Series are true linear, non-pendulous type instruments, inherently insensitive to cross-coupling accelerations. These instruments are available in a variation of ranges from ± 1 G to ± 60 G and can be provided with two potentiometer pickoffs. Essentially constant damping is maintained automatically throughout the entire operating range of -65°F. to $+175^{\circ}\text{F.}$ No warm-up time is required.

The combination of constant damping, high performance, small size and ruggedness makes HONEYWELL LINEAR ACCELEROMETERS of the Type 500 Series ideally suited for aircraft and missile applications where the most severe environmental conditions are encountered. Write for Bulletin LA-500, Minneapolis-Honeywell, Boston Division, Dept. 1, 40 Life Street, Boston 35, Mass.

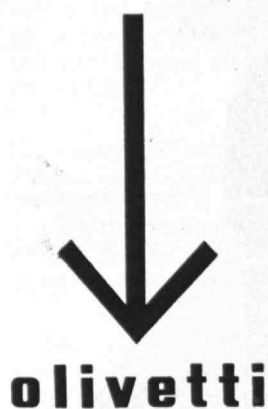
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Military Products Group

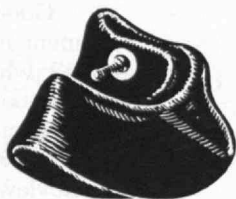
Olivetti office machines are made and assembled in eleven factories in six countries on three continents. Founded 50 years ago, Olivetti today employs 22,000 people, makes almost every major type of office machine, has sold 3,000,000 typewriters and 700,000 calculators.

In the United States, through dealers in principal cities, Olivetti offers printing calculators, adding machines, accounting machines and typewriters that provide many time-saving features. Write Olivetti Corporation of America, 375 Park Avenue, New York 22, N. Y.

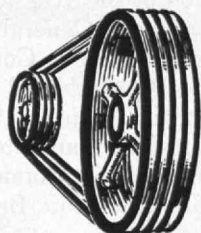


The Olivetti Divisumma 24, a high-speed single-keyboard printing calculator with automatic constant and memory, combines many individual computations into a single continuing calculation, eliminating re-entries, saving time and work.





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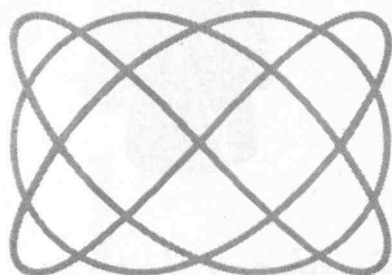
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Good Policy. — A note of optimism and encouragement is struck (page 405) by WALTER G. WHITMAN, '17, who believes that persons can — and will — work for the betterment of mankind when the proper environment is created. His message is being delivered at various gatherings throughout the country; The Review's article is based on an address given before the Boston Section of the Institute of Radio Engineers last March, but adapted for the printed page by Professor Whitman, who is head of the Department of Chemical Engineering. Except for a decade when he was associated with the direction of research for the Standard Oil Company (Indiana), Professor Whitman has been a member of the M.I.T. staff since his graduation in 1917. In recent years he has had unusual opportunity to play important roles in the administration of scientific endeavors on the national and international levels. He was director of the Basic Chemicals Division of the War Production Board, 1941–1945; member of the General Advisory Committee to the Atomic Energy Commission, 1950–1956; chairman of the Research and Development Board, Department of Defense, 1951–1953; secretary-general of the United Nations International Conference on the Peaceful Uses of Atomic Energy, 1955; and president of the American Institute of Chemical Engineers, 1956.

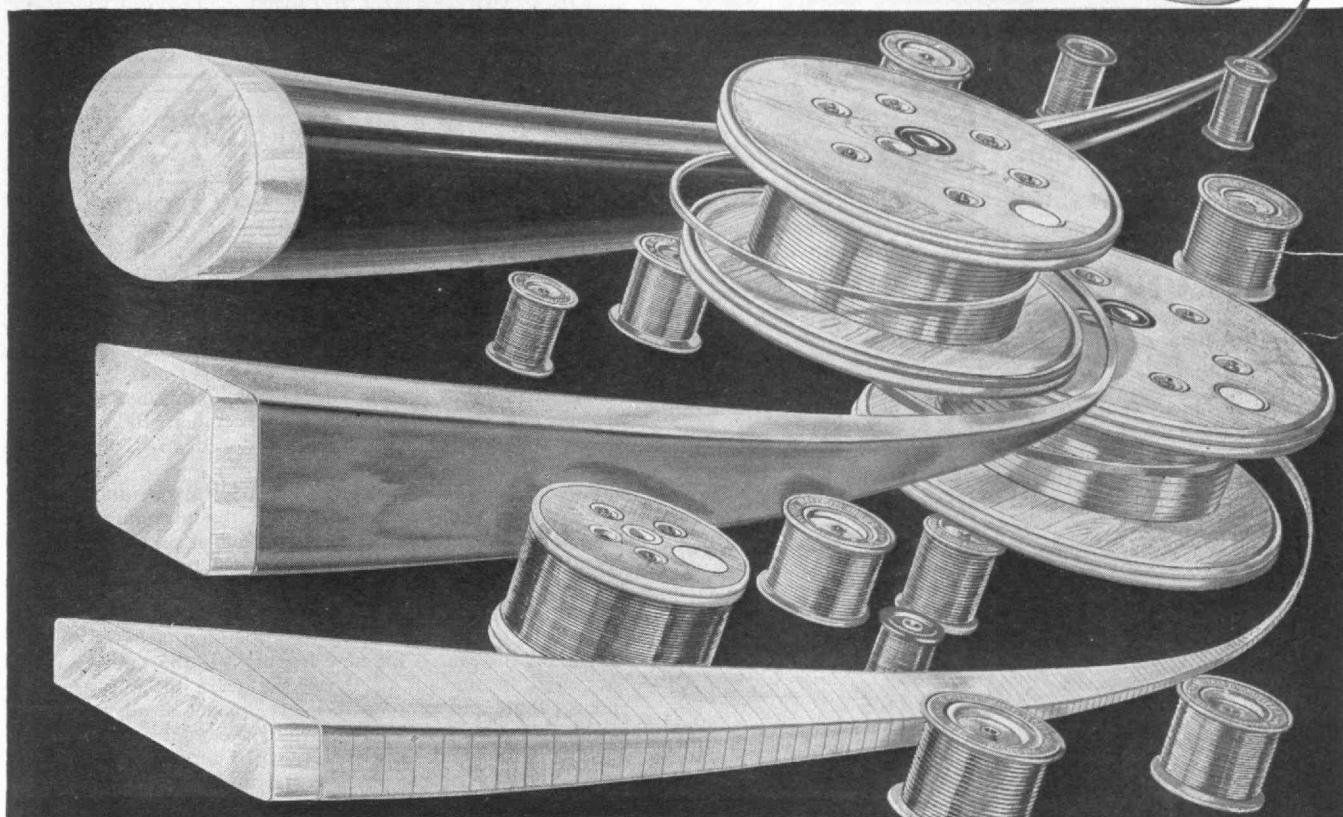
Good Potentiality. — In an examination of technology in a free society (page 408), JOHN B. RAE, Associate Professor of History at M.I.T., reminds us that if the incentive to produce is destroyed, the productive members of society are bled white to support the nonproductive ones, and economic and technological progress dies of suffocation. Professor Rae received the A.B., A.M., and Ph.D. degrees from Brown University in 1932, 1934, and 1936, respectively. He taught at Yale University, was a member of the Brookings Institution, 1936–1937, became assistant to the president of Brown University, 1937–1939, and since then has been at M.I.T. In 1956–1957 he was exchange professor of social studies at Case Institute of Technology. He is a member of the editorial board of *Business History Review* and *Explorations in Entrepreneurial History*, of the advisory board of the Lincoln Educational Foundation, and of the Executive Committee of the recently founded Society for the History of Technology.

Good Resource. — With his usual ability to tackle a complex topic and reduce it to its significant elements, interestingly written, FREDERIC W. NORDSIEK, '31, outlines (page 410) man's prodigal use — and waste — of water. An editorial associate of The Review since 1941, Mr. Nordsiek needs no introduction to Review readers. For those who feel the need of additional biographical data, we refer them to the January, 1958, Review, where Mr. Nordsiek's past is exposed on page 138.

(Concluded on page 390)

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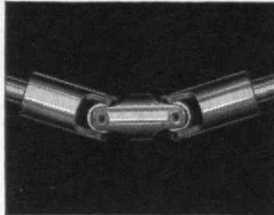
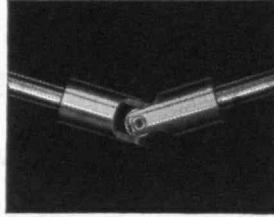
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GEARS

THE TABULAR VIEW (Concluded from page 388)

Good Riddance. — Although it once was a scourge to be greatly feared, cholera has been eliminated from the United States primarily through sanitary engineering, according to JAMES A. TOBEY, '15 (page 413). Colonel Tobey, S.B., LL.B., M.S., Dr.P.H., is a frequent contributor to The Review — as well as to other journals. He is also a well-known lecturer on public health, to which field he has devoted his entire professional career.

MAIL RETURNS

OUTER SPACE — THE NEW FRONTIER

FROM WALTER B. KIRBY, '07:

The project of the International Geophysical Year is the greatest international collaborative effort which has been attempted for peaceful purposes. Sixty-seven participating nations are engaged in this activity, and there are more than 10,000 scientists and technicians working from 2,000 major stations scattered over the entire world! For such a comprehensive endeavor to terminate in December, 1958, however great its accomplishments, would not seem to be in the best interest of the world at large.

It is conceivable that the project now in operation should be continued, and expanded to explore the intriguing prospects of outer space. Rather than one year of international co-operation, the start of a "Century of International Co-operation," in the promotion of advance space projects, might well be considered.

One of the causes of war is the expansion of overpopulated areas and the search for new frontiers. If the nations, scientists, and technicians of the world were to give as much money, time, and effort to the development of advance space problems, as they now give toward the total annihilation of the world's populace, the idea of international bickering would tend to become obsolete and unthinkable.

The attempt to explore the planets of outer space will stimulate the imagination of all peoples, and might well provide the much-needed new frontier for expansion during the next century.

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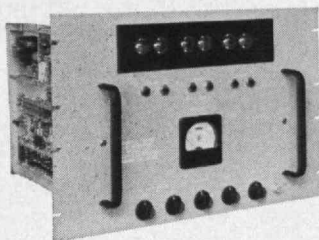
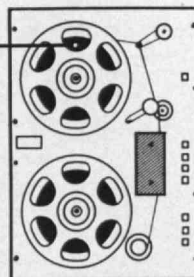
INDUSTRIAL CONSTRUCTION
101 Park Avenue, New York

Alfred T. Glassett, '20, President

RAPID ACCESS

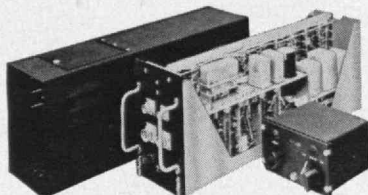
IN ANALOG DATA REDUCTION SYSTEMS

Three companion units by Hycon Eastern provide automatic indexing and high-speed access to selected data in multi-channel magnetic tape instrumentation systems.



For Tape Indexing

DIGITAL TIMING GENERATOR, MODEL 201, generates numerically coded timing signals which are recorded on magnetic tape throughout the data recording periods, providing a precise digital index in terms of elapsed time. The Generator also visually displays the exact time in hours, minutes and seconds as illuminated digits.

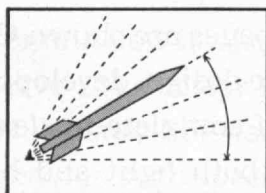
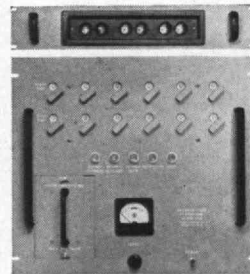


DIGITAL TIMING GENERATOR, MODEL 206A, FOR AIRBORNE APPLICATIONS is a militarized version of Model 201. A Remote Control Box contains Power off-Standby-Operate Switch, the Digital Clock Set, and the Time Display. Completely transistorized, Model 206A includes a binary coded decimal system al-

though other timing formats are available to meet customer requirements. Weighing only 15 pounds, Model 206A is stable to 1 part in 100,000 giving an accuracy of ± 1 second in 1 day's time.

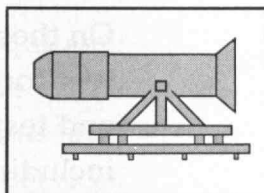
For Tape Search

MAGNETIC TAPE SEARCH UNIT, MODEL 202, operates during data reduction periods. On the basis of time indices recorded on the tape by the Digital Timing Generator, this instrument automatically locates and selects for controlled playback the tape data included between a "sequence start time" and a "sequence end time" specified by panel dial settings. The time index is visually displayed as illuminated digits on a small separate panel which may be remotely located for convenience. Model 202 may be modified to search for timing formats other than those originated by Model 201.



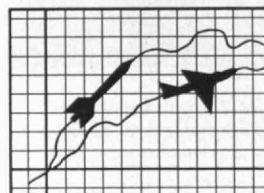
WIND TUNNEL TESTING

Pressure and temperature data of missiles are referenced to angle of attack. Model 201 records on tape a digitized position signal for each new angle of attack.



JET ENGINE TESTING

Digital Timing Generator, Model 201 synchronizes all data receiving equipment. Its output can be piped to multiple test cells and control rooms simultaneously.



MISSILE AND AIRCRAFT TESTING

Model 206A generates timing signals simultaneously with other flight test data. Model 201 generates a timing code format for synchronizing ground station recordings.

Write for Technical Bulletin TSG

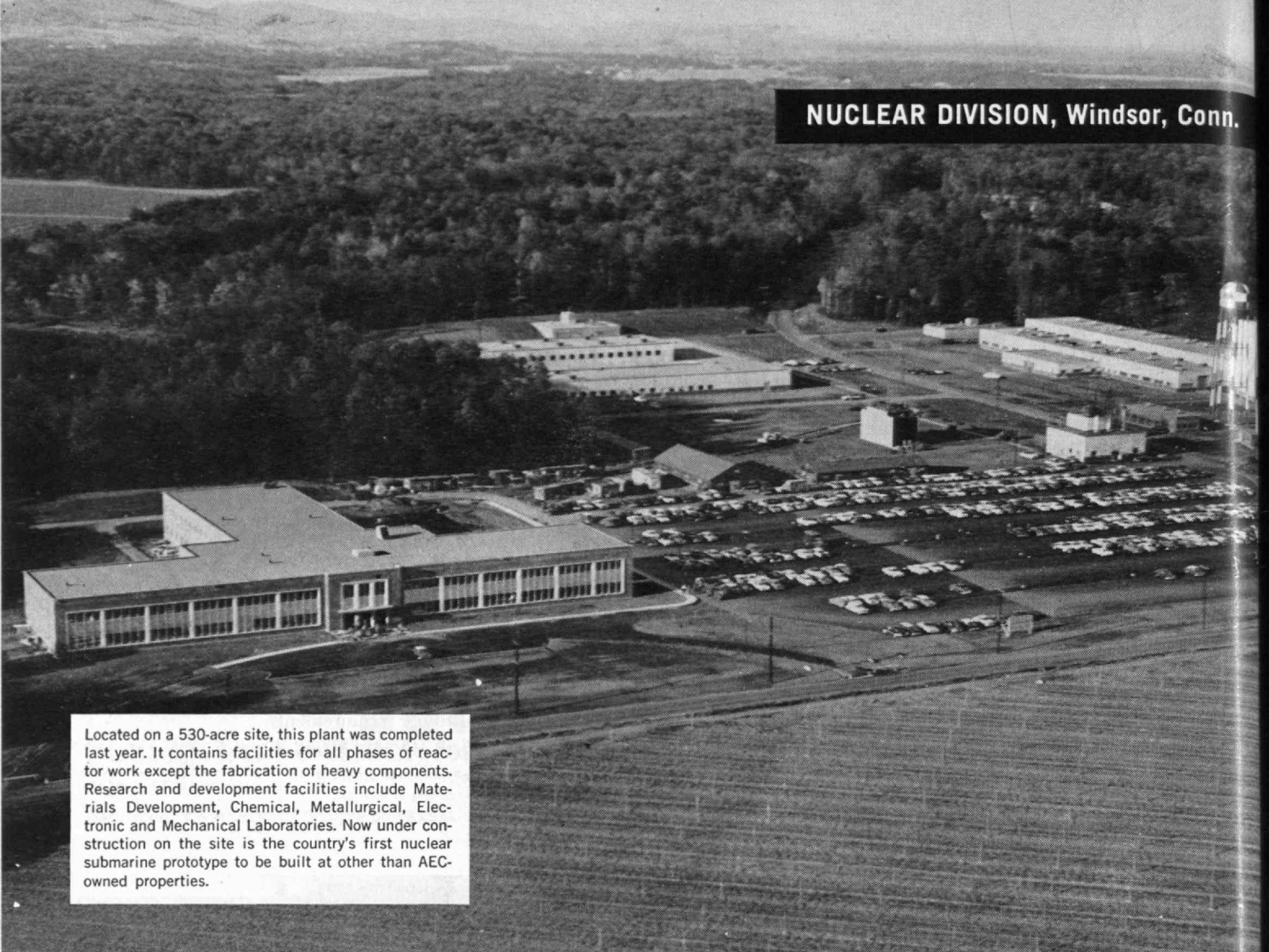
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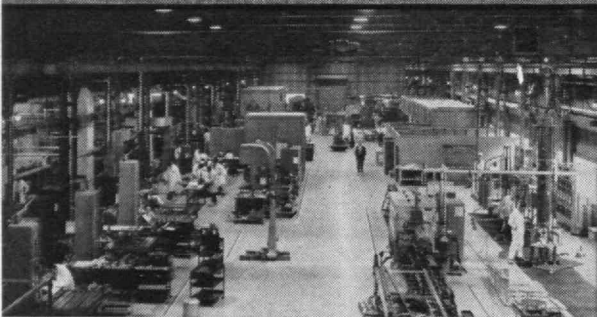
Dept. H

Cambridge 42, Mass.

NUCLEAR DIVISION, Windsor, Conn.

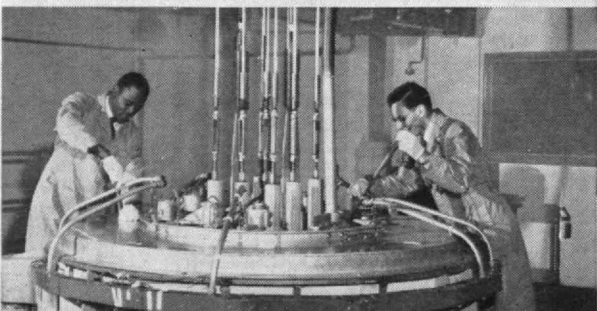


Located on a 530-acre site, this plant was completed last year. It contains facilities for all phases of reactor work except the fabrication of heavy components. Research and development facilities include Materials Development, Chemical, Metallurgical, Electronic and Mechanical Laboratories. Now under construction on the site is the country's first nuclear submarine prototype to be built at other than AEC-owned properties.



(ABOVE)—Partial view of Fuel Element Manufacturing Plant at Windsor. This plant includes an 80-foot high building where the intricate job of reactor core assembly is performed.

(BELOW)—Preparing a reactor for test in one of Windsor's two Critical Assembly buildings. Facilities for reactor testing include equipment for chemical analyses, spectrography, spectrometry, destructive and non-destructive tests.



Ready FOR

On these pages are shown Combustion's facilities for the design, development, manufacture and test of complete nuclear reactor systems, including both light and heavy components. . . . These facilities, fully staffed by scientists and technicians, enable the Company to design and manufacture full-scale nuclear power installations for any requirements—civilian

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