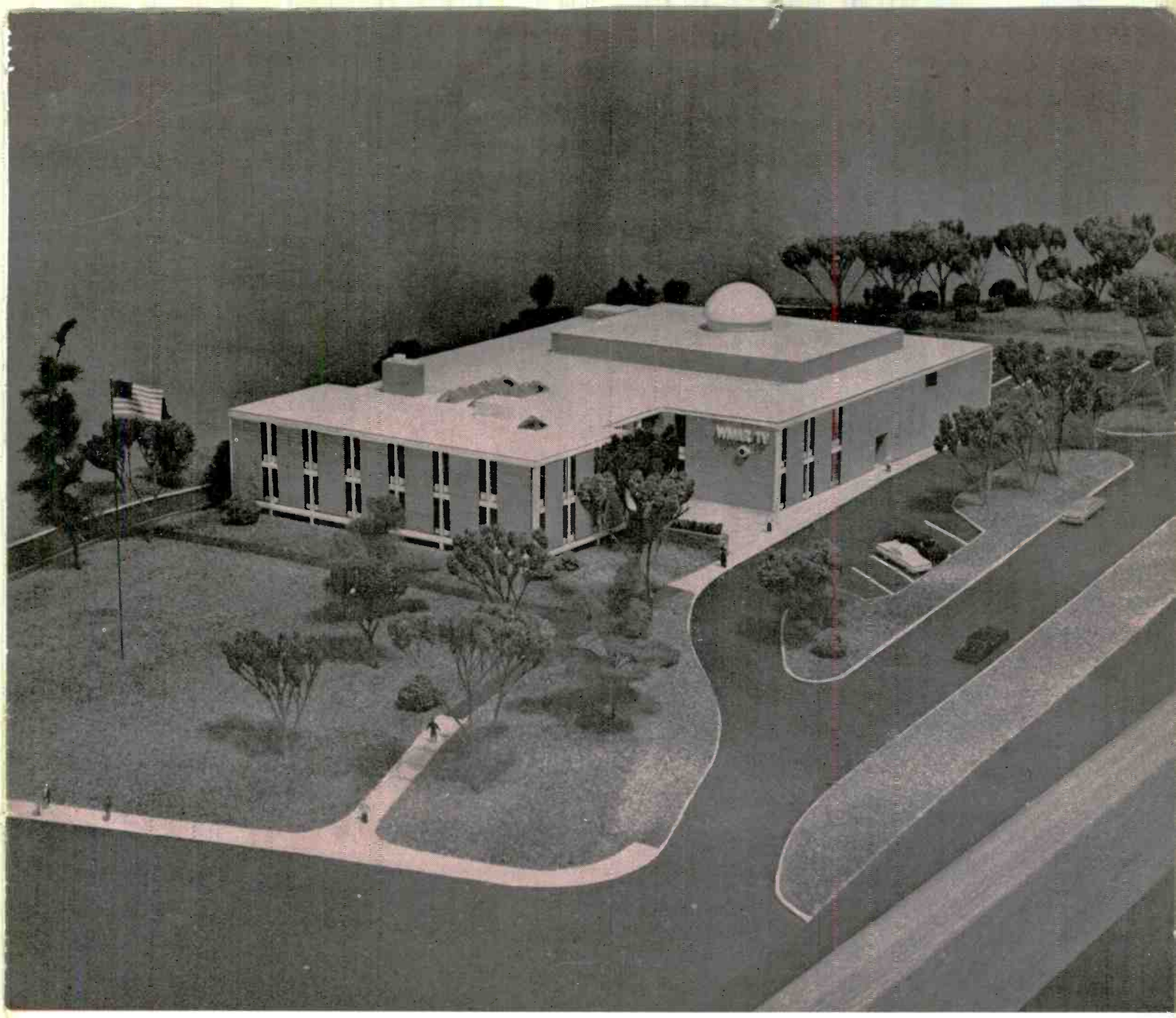


TECHNICIAN ENGINEER

NOVEMBER, 1962

Published for the Employees of the Broadcasting, Recording and Related Industries

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS — AFL-CIO

LANDMARKS OF LABOR NO. 40

Julia C. Lathrop

ESTABLISHMENT OF THE U.S. CHILDREN'S BUREAU APRIL 9 1912

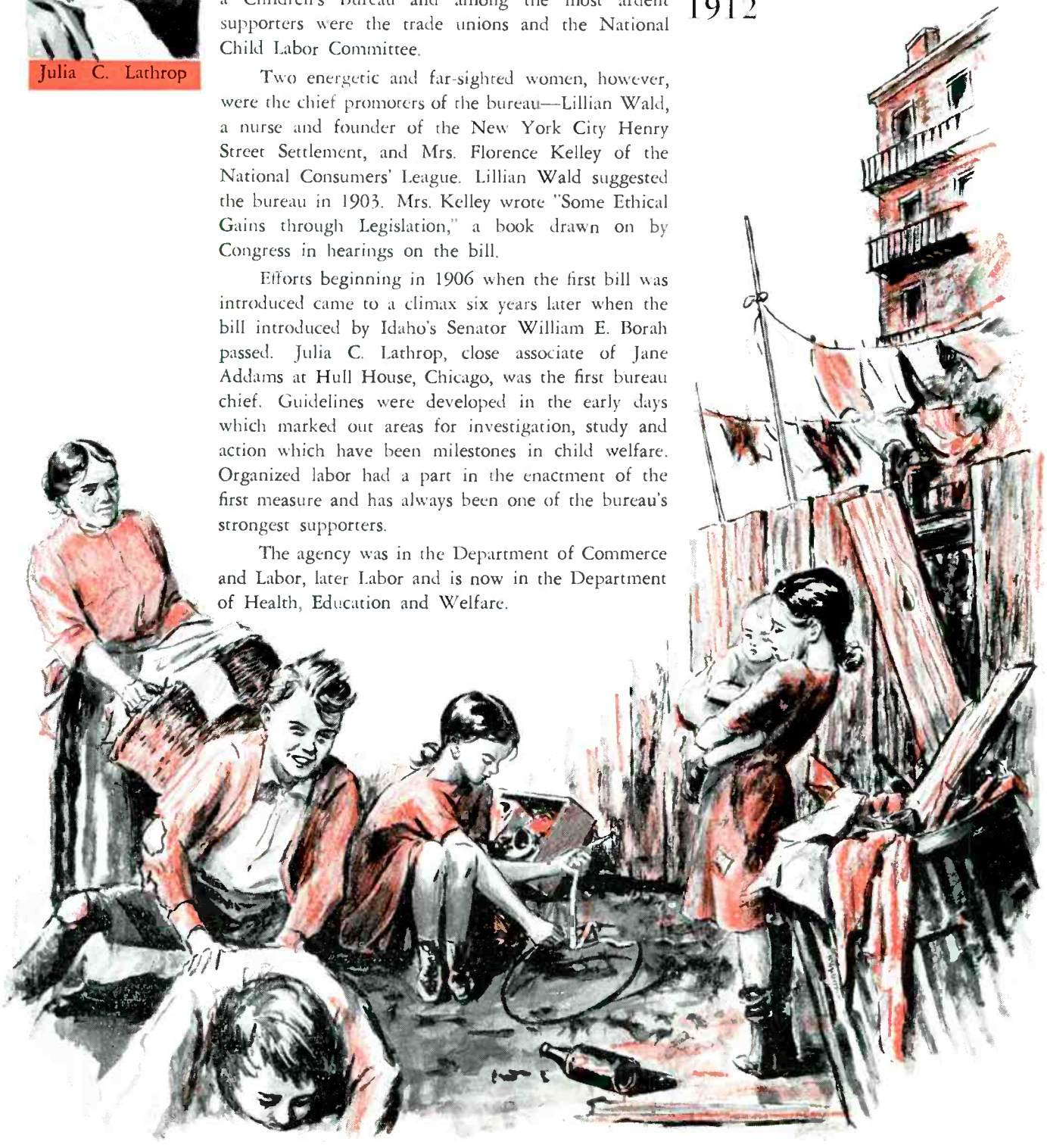
April 9, 1912, President William Howard Taft signed a bill creating in the Federal Government a Children's Bureau charged with investigating and reporting "upon all matters pertaining to the welfare of children and child life among all classes of our people." Congress also appropriated the modest sum of $25,640 for the bureau's first year.

Signing this bill represented a triumph of some years in which many had backed the effort to found a Children's Bureau and among the most ardent supporters were the trade unions and the National Child Labor Committee.

Two energetic and far-sighted women, however, were the chief promoters of the bureau—Lillian Wald, a nurse and founder of the New York City Henry Street Settlement, and Mrs. Florence Kelley of the National Consumers' League. Lillian Wald suggested the bureau in 1903. Mrs. Kelley wrote "Some Ethical Gains through Legislation," a book drawn on by Congress in hearings on the bill.

Efforts beginning in 1906 when the first bill was introduced came to a climax six years later when the bill introduced by Idaho's Senator William E. Borah passed. Julia C. Lathrop, close associate of Jane Addams at Hull House, Chicago, was the first bureau chief. Guidelines were developed in the early days which marked out areas for investigation, study and action which have been milestones in child welfare. Organized labor had a part in the enactment of the first measure and has always been one of the bureau's strongest supporters.

The agency was in the Department of Commerce and Labor, later Labor and is now in the Department of Health, Education and Welfare.



The INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS
GORDON M. FREEMAN — International President
JOSEPH D. KEENAN — International Secretary
JEREMIAH P. SULLIVAN — International Treasurer

TECHNICIAN ENGINEER

VOL. II, NO. 10
ALBERT O. HARDY, Editor

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the cover

WMAR-TV, Channel 2, Baltimore, Md., plans to open a new $2.5 million plant early next year. A model of the new facility is shown on our November cover. The new structure will be located at 6400 York Road, opposite a large shopping center, and it'll be called "Television Park." It'll have 65,000 square feet of floor space to accommodate equipment, staff, and members of Local 1200, who serve as engineers and technicians.

index

For the benefit of local unions needing such information in negotiations and planning, here are the latest figures for the cost-of-living index, compared with 1961 figures: September, 1962—106.1 (130.2 on old base); September, 1961—128.3. (Please note: With the January, 1962, index, the reference base was changed to 1957-59—100, from a previous base of 1947-49.)

COMMENTARY

EMPLOYERS should be as concerned as unions with finding solutions to the job-displacement problems of automation, Pres. George M. Harrison of the Railway Clerks declared recently in Washington.

Harrison, an AFL-CIO vice president, told a management conference that "what ails the national economy is lack of customers" and not "lack of efficiency."

"All the scientific progress you can muster, all the productivity increases you achieve, all the cuts in unit labor costs you can bring about, will be meaningless without full employment."

While the labor movement is aware of the broad range of the automation challenge, Harrison told the employers' group:

"There are far too many in your ranks who do think it is enough to apply in ever-increasing degree the substitution of machines for men. There lies the great difference between us."

In addition to governmental action which is needed, Harrison said, private employers must accept "responsibility" for the solution of social consequences resulting from automation.

He suggested as guidelines:

- Employers contemplating technological change should consider "any adverse effect upon employment opportunities and dislocation of the work force" as "part of the real cost of making the change."
- Timing of changes so that normal attrition and expansion would "preserve work opportunities."
- Advance retraining of employes wherever possible, and relocation "without any financial burden to the worker."

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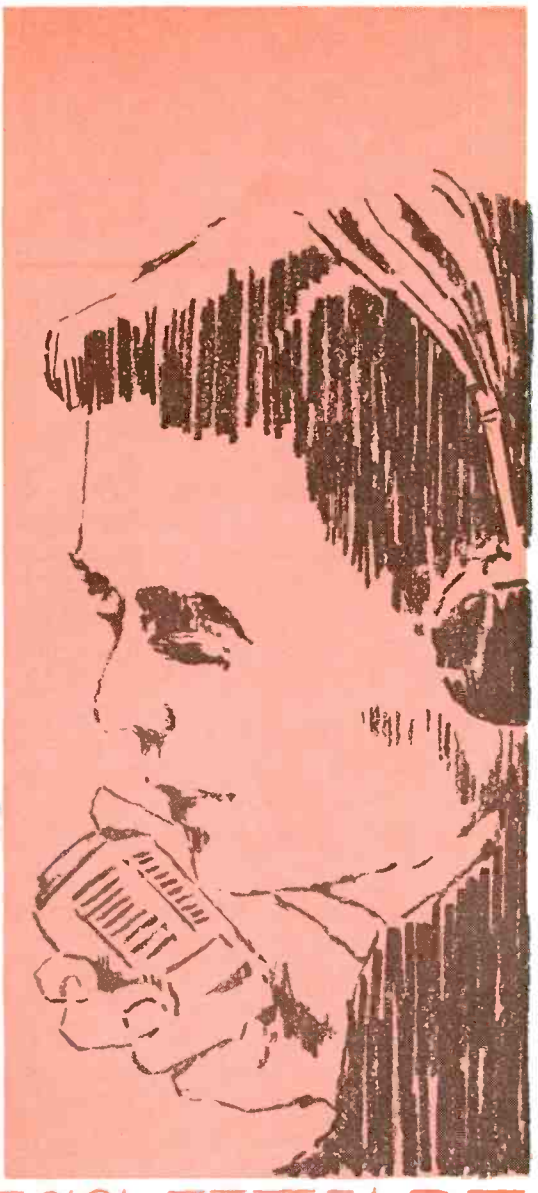
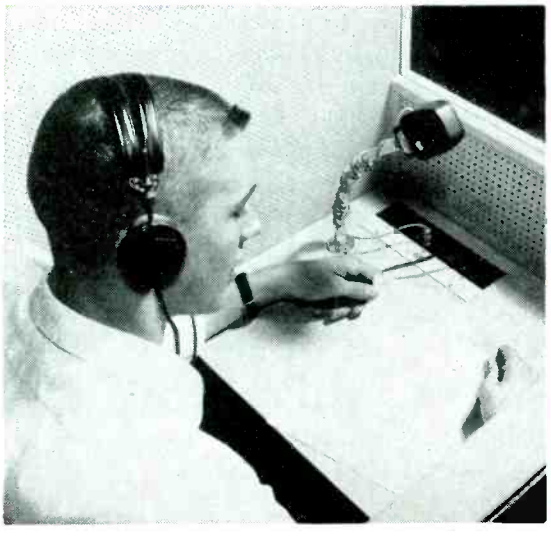


ELECTRONICS INVADE

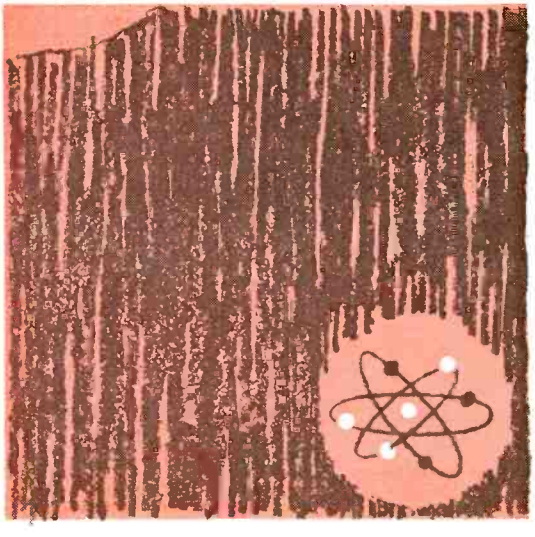
TEACHERS throughout the classrooms of America today are welcoming with enthusiasm new working partners in education — electronically speaking.

The headsets and tape recorders of the language laboratories and the television monitors are becoming as familiar in schools as blackboards. The language laboratory allows students to receive the most modern type of language instruction from the point of view of speaking and understanding. The student is able to hear an instructor through his headset and to talk back individually. The classroom teacher controls the tape recorder and monitors the lesson, an intercom system enabling him to speak to the students individually or by using an "all call" switch, as a group. In addition to

A language laboratory at La-Salle Academy, Providence, Rhode Island. Twenty-seven percent of new high schools being planned are installing language labs.



In Downingtown, Pa., high school a student reads his foreign language lesson through a booth microphone.



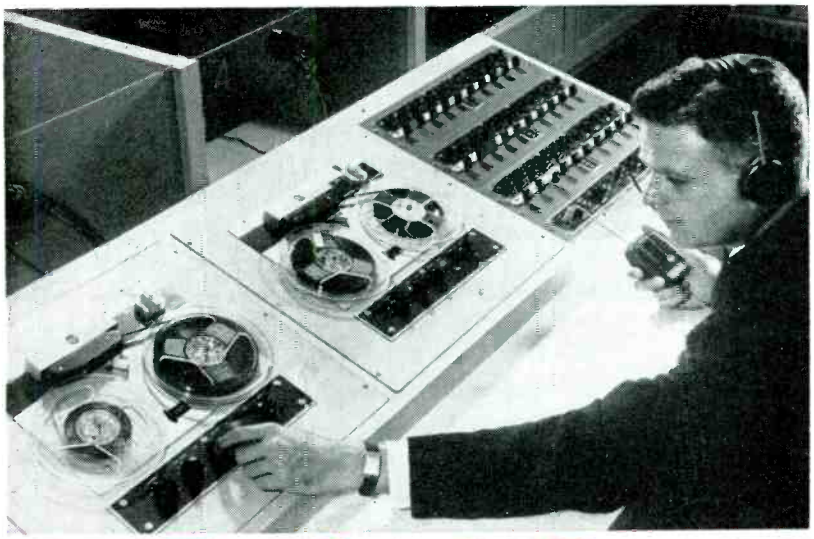
the fixed school laboratories in which each student has an individual booth, there is also a new mobile laboratory which can be moved from classroom to classroom and can be used to instruct up to ten students at a time.

Besides foreign tongue languages, the electronic devices used in the laboratory are planned for remedial reading, classes for instruction in music theory, for stenographic practice and for geometry and other rote learning courses. This headphone and tape recorder system will then be a highly valuable supplement in many areas of teaching.

An additional virtue of electronics teaching is that it enables a teacher to bring in experts in specialized fields, via tape recordings, to add depth to discussions. Television, meanwhile, helps to relieve a teacher shortage. Not only is it offering spectacular multi-state coverage via airplane transmitters, as in the Mid-West, but it is bringing topnotch educators to many rural students, who have long needed broader horizons.

Educational television came into existence in the United States in 1953 and today over four million students receive part of their education through this medium, enabling them to hear and see some of the country's experts in various fields. More and more educational television stations are being planned throughout the United States.

Electronics is playing a broadening role in the national effort to upgrade education—the language laboratory and the television set bringing a new and exciting dimension to the classroom.



In a Downington, Pa., high school, left, an instructor switches a tape to "play".

BELOW: The student listens and responds . . . a good way to compare pronunciation and inflection with that of the instructor.

Such mobile electronic language units, as the one shown at left, can be moved from classroom to classroom. They cost less than $1,000 each.

How Much 'Tax Relief' Do Big Investors Need? Consider . . .

BUSINESS AND ITS TAX MANEUVERS

The Wall Street slump and the bear market that still persists have turned out to be golden opportunities for business propagandists to demand, and perhaps get, the kind of tax relief that they want for themselves.

The very same groups who could never bear to blame pro-business President Hoover for the Great Stock Market Crash of 1929, or pro-business President Eisenhower for the three recessions he gave us, are now proclaiming that the "anti-business" policies of President Kennedy have so terrorized the business community that they have lost faith, confidence and hope in the future of the country.

Actually, from the viewpoint of labor economists, today's wobbly economy is largely due to Administration conservatism rather than to any anti-business radicalism, and is not going to be cured by surrendering to business desires for tax relief that inevitably will give the upper brackets the lion's share of whatever relief Congress votes. This happened in 1954 and is likely to happen again.

Already AFL-CIO President George Meany, in a memorandum to the President, has sounded an unusually stern warning that it isn't investment incentive based on tax benefits that is needed but incentive based on a bigger supply of customers with money in their pockets.

In any event, Wall Street weakness is now being used as a propaganda instrument far out of proportion to its real importance as a barometer of what really ails the economy.

- We are told, of course, that the market sank because of lack of confidence in an "anti-business" Administration. Yet the worst plunge that the market has ever taken occurred during a "pro-business" Administration in 1929.

- We are told that stocks were too high and that a "corrective" movement was necessary to place value and earnings on a sound relationship. Yet the President is now importuned to take action that would boost the market again and presumably re-establish the high stock prices that were supposedly out of line.

- We are told that now that we have "peoples capitalism" the whole country is wringing its hands in despair at the billions of dollars it has lost.

Undoubtedly more Americans own stock today than ever before, yet the fact is that the overwhelming ownership of stock is in the hands of a relatively few families which get the lion's share of national income. Only 12 percent of American families with incomes under $5,000 —which means the vast majority of our people—owned stock in 1960. And of these, the number who owned stock worth more than $10,000 in shares was so negligible that it wasn't even listed. Actually, most Americans do not own a single share of stock.

At the other end of the scale, 56 percent of families in the $15,000 or over bracket owned stock and 25 percent of these owned more than $10,000 in stock.

Thus, when all is said and done, the recent stock market slump has affected a relative handful of Americans and even these, mostly on paper.

Even on the assumption that Wall Street is a bellwether of economic conditions and that the cure for the present economic sluggishness lies in capital investment, how vital a role does Wall Street actually play in such investment?

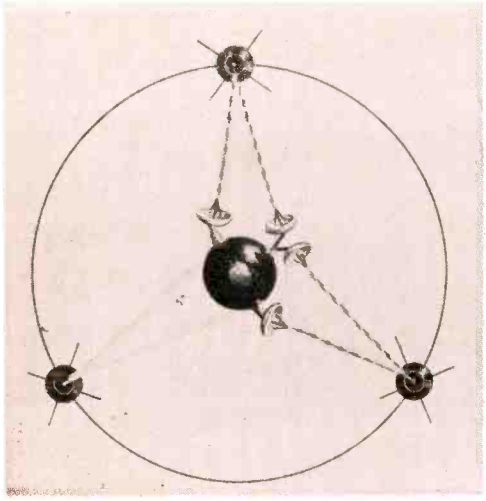
There was a time when a vast amount of business and industry financing was done through stock issues to the public. That day is gone. Great corporations don't run to Wall Street as they once did to finance their growth and modernization. Today the customer does the financing through high prices and undistributed profits with tax amortization contributing most of the needed new funds.

As Meany pointed out in his memorandum to the President, some $148 billion was invested in plant and equipment over the past five years. "In that same period," he added, "American corporations had available from internal sources—that is, from retained allowances —a sum equal to $147 billion . . . why then must additional outlays be secured from profits and tax cuts?"

Only two months ago—long before the Wall Street slump—BUSINESS WEEK said: "The fact is that business will make new investment only when it sees expanding markets and the opportunity to make a fair profit in them."

If American tax policy is now to be shaped in the interest of speculators in Wall Street, as the renewed cries for tax relief would have it, we will be putting the tax cuts where they aren't needed and will be encouraging a new Wall Street inflationary boom.

Wall Street prices and the manipulations of Wall Street speculators should not be the criteria by which we judge what to do about taxes to head our economy into a new period of growth.



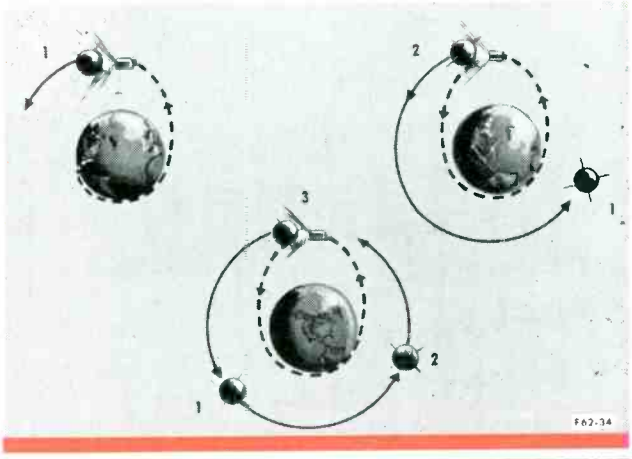
COMMUNICATIONS SATELLITES

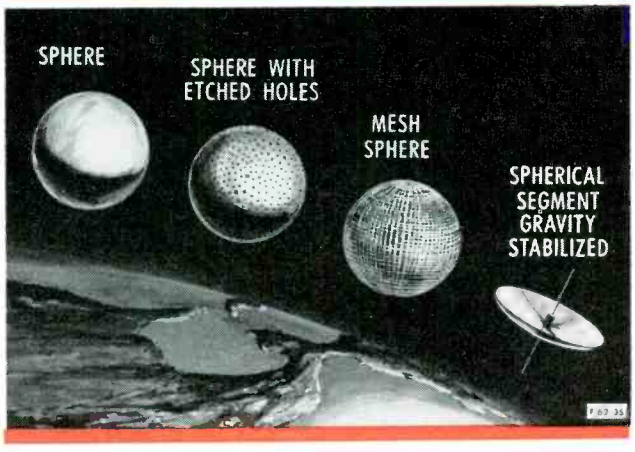
Orbiting objects of many shapes promise to change the picture of broadcasting and reporting

Communications satellites may well revolutionize all broadcasting and communications in the next few years. The demonstrations of Telestar and Echo earlier this year are only inklings of what's to come.

On December 2, "Relay," a satellite developed by RCA, is scheduled for launching. Another, and most promising, satellite, "Syncom", developed by the Hughes Aircraft Company, is scheduled to go into orbit in February. Both satellites will be sent into space by the National Aeronautical and Space Administration.

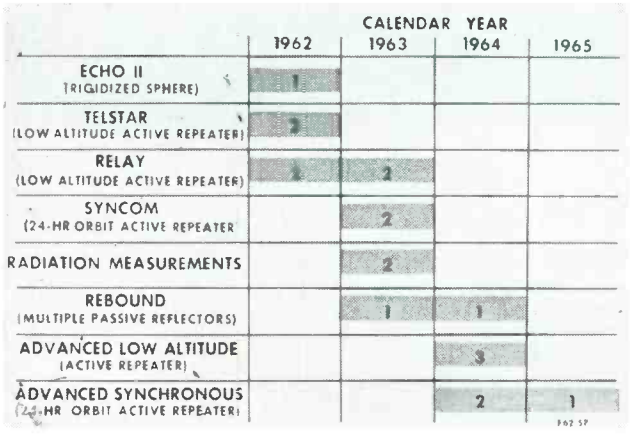
On this page and the following one are pictures indicating something of what's ahead.

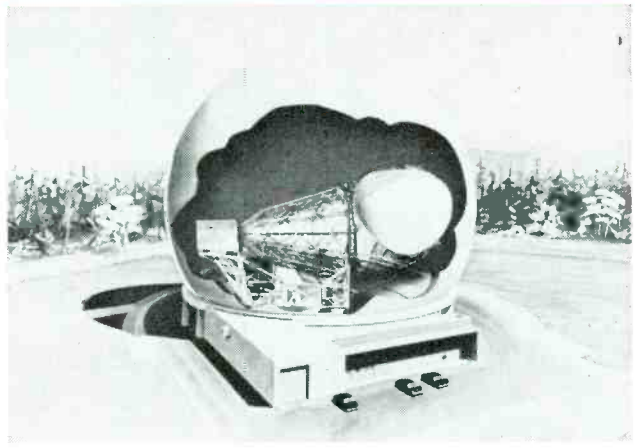




READING FROM TOP: The first diagram illustrates "synchronous orbiting," whereby three or more satellites relay completely around the world. (2) The three steps in producing "multi-launch"—three satellites equally spaced in orbit. (3) Forms of "passive" communications satellites. (4) The satellite launch schedule through 1965. (5) The AT&T satellite relay facility at Andover, Maine.

TURN THE PAGE





COMMUNICATIONS SATELLITES

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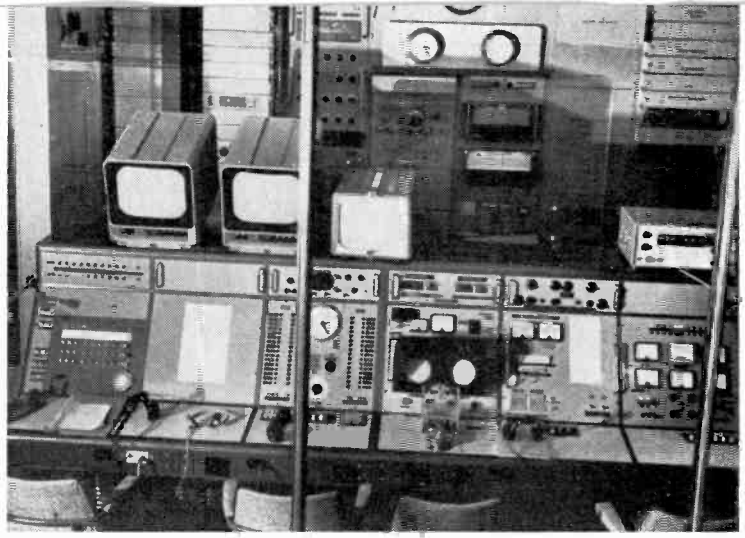
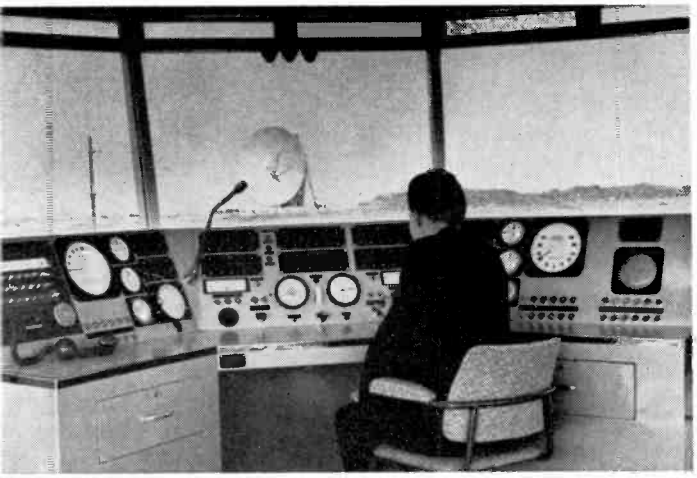
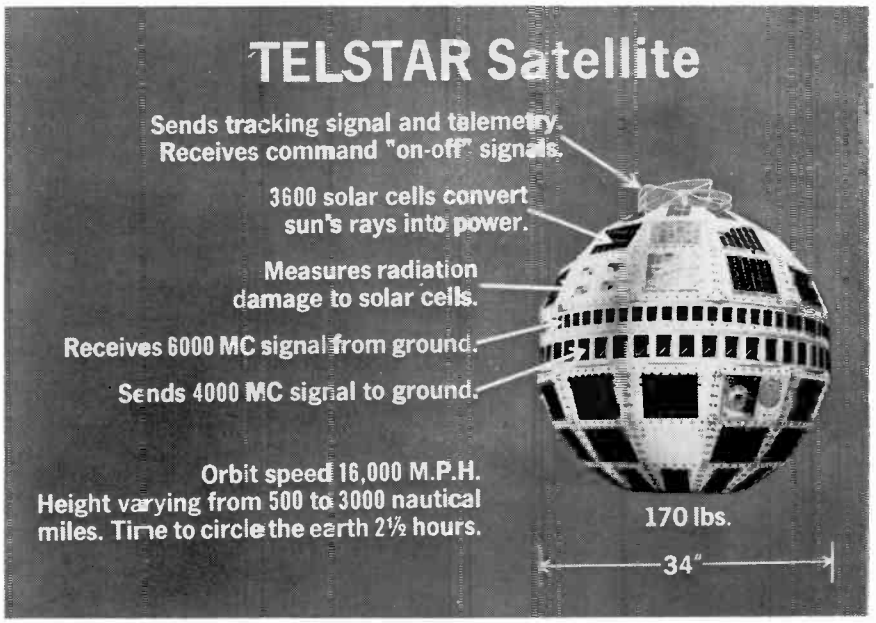


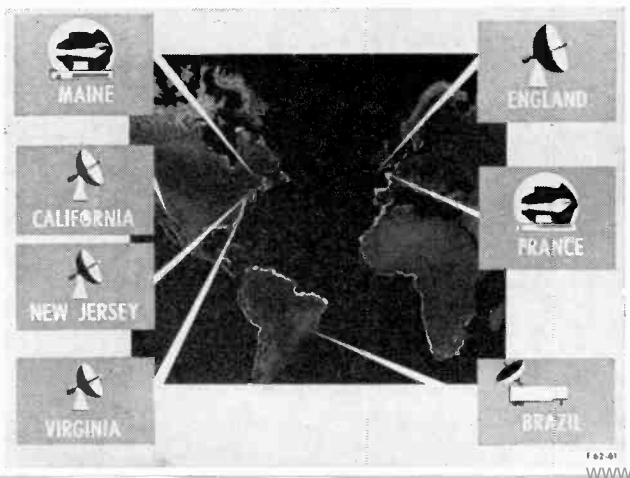
RIGHT: The main control room of the communications satellite ground station at Goonhilly Downs, England. The station is operated by the General Post Office of the United Kingdom and is one of several ground station at Goonhilly in map below.



LEFT: A view of the 85-foot-diameter antenna Goonhilly Downs, England, as seen from the console in the control tower.



RIGHT: An explanation of some of the components of the Telestar satellite, which went into orbit for the first time early this year.



LEFT: Ground relay stations maintained by the Free World in its international efforts to develop worldwide satellite communications.

Labor Notes Anniversary of Deaths of Green and Murray

Wooden bas-relief profiles of William Green and Philip Murray (shown right and left) are mounted on plaques in the lobby of the AFL-CIO Headquarters in Washington, D. C. A similar plaque of Samuel Gompers is displayed in the Federation building, also.

THE AFL-CIO Executive Council, at a meeting in Chicago early this month issued the following statement:

"Ten years ago this month, two of the greatest leaders of American working men and women died. William Green, president of the American Federation of Labor for 28 years, died on November 21, 1952, and Philip Murray, president of the Congress of Industrial Organizations for 12 years, died on November 9, 1952.

"Both men were dedicated to the interests of American working men and women. They devoted their lives, from their earliest years, to the trade union movement, and not only made a great contribution to improving the wages and working conditions of those in organized labor, but they also helped immeasurably to improve the lives of all Americans. They made our free enterprise system not only more vigorously healthful, but more considerate of the needs of all our people. They helped build America into supremacy in the free world, into being a champion of the rights of those everywhere who were oppressed by economic and political tyrants.

"We here today, in marking the passing of our great leaders, declare that we shall do all we can to try to further the principles of social justice and the democratic way of life, according to the example that they have so well set for us."

READING TIME

A REVIEW OF RECENT BOOKS

FM Stereo Multiplexing, *by Norman H. Crowhurst, soft cover, 72 pp., John F. Rider Publisher Co., New York, $1.25.*

This is a book produced as a result of the recent FCC go-ahead on FM stereo broadcasting. The text explains in detail the FM stereo system of broadcasting and reception. FCC standards are carefully explained and illustrated.

Reception is covered both in theory and practice, with many schematic diagrams used to explain circuit operation. In addition, many complete schematics of stereo FM adaptors are shown.

Of specific interest to the technician are chapters on the installation and conversion, alignment and performance checking and general trouble shooting procedures for FM stereo multiplex receivers.

Norman Crowhurst, the author, has written numerous books, including the following Rider publications: *Basic Audio, Stereophonic Sound, Fundamentals of UHF, and Basic Mathematics.*

Fundamentals of Modern Semiconductors, *96 pp., Howard W. Sams & Co., $1.25.*

This volume tells about the various types of semiconductors being used in today's electronic circuitry. An invaluable source of learning, as well as a ready reference for those who possess some knowledge of transistor technology. Technicians, engineers, teachers, and students will find the material presented in a clear and uncomplicated style with an absolute minimum of mathematics and formulas.

Starting with a brief review of solid state physics which clearly explains the atomic concept, and including details of transistor technology and characteristics, *Fundamentals of Modern Semiconductors* also describes the various specific types of diodes and transistor devices in use. Among the new devices covered are tetrodes, field-effect transistors, PNPN semiconductors, mesa transistors, tunnel and other special diodes, phototransistors, and many others.

The eight chapters cover: Semiconductor Electronics; Transistor Technology; Junctions; Diodes and Rectifiers; Transistor Types; Phototransistors; Other Semiconductor Devices and Parametric Amplifiers.

LIFE HOLDS MORE than LOVE AND LAUGHTER

By EDWARD P. MORGAN

(Excerpted from the nightly broadcasts of Edward P. Morgan, ABC commentator sponsored by the AFL-CIO. Listen to Morgan over the ABC network Monday through Friday at 7 p. m., EST.)

I GOT A LETTER from a girl named Mariann in Laramie, Wyo., written when the world was holding its breath in fear of war over Cuba. Eased though the latest crisis may be, she raised points which in their penetratingly personal way are as vital as any White House announcement or Kremlin communique and demanding, therefore, attention both urgent and tender because they go to the heart of the matter—the fate of the human race in face of the cataclysm the next time around.

MORGAN

"Being too young to remember World War II," she wrote, "and too young to have understood the Korean conflict, on the eve of perhaps another war, I need the answers to some questions. I don't need to ask what war is. It is cold fact. I don't need to ask why there is war. History and psychology give as good answers as can be given. I do need to ask this: what attitude can one take toward war? How can you face tragedy, fear, sorrow, and anger if you have never known them?

"I am 19, a college student, married. How can I stand to see my husband die? What must I do to preserve my sanity and emotional balance when the world is crazy and aflame? How can I face my shattered plans and build new ones not knowing what tomorrow will be?

"The answers to these questions must partly be found inside myself, I know, but also we, of my generation, need to hear advice from those who have lived in war-time." . . .

Do I hear any volunteers?

Mariann's questions, of course, are ageless and they measure, with shame for us all, the imperceptible progress mankind has made toward real maturity and wisdom.

As the *Washington Post* put it, "We have escaped this time," but in view of the dismaying evidence that the existence of thermonuclear power has not transformed the dynamics of power politics in the world, "it will not be wise to turn back, in relief and in prayer to the tasks and occupations and diversions that engaged us before there was a Cuban crisis. Men of good will everywhere must seek an alternative to war and the threat of war as an instrument of policy. Until and unless this is done, the only choice vouchsafed to mankind, in the end, may be the right to choose the crisis that will not yield to conciliation and compromise."

And, that, frankly, is not a very safe or appealing choice.

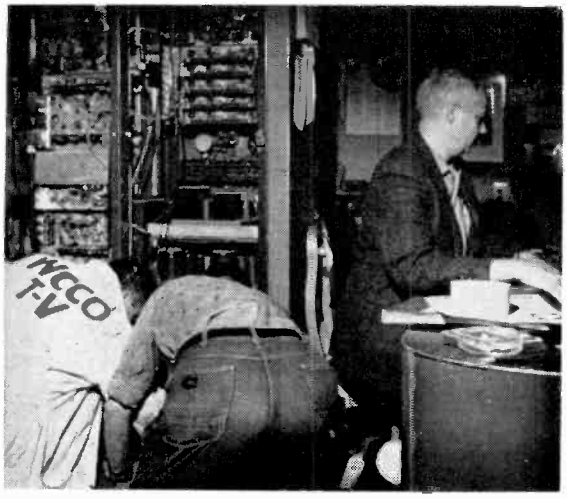
STILL in considering Mariann's persistent question, it gains us nothing but disaster to turn away from the threat of war as if its new horrors automatically cancelled out the threat. It is monstrous that war and the threat of war are still the instruments of policy. It is monstrous but it is a fact. And it was that fact that Pres. Kennedy bravely faced last month. Those of his countrymen who criticize him, those in Britain and elsewhere who condemn him, should more clearly and honestly remember Munich. If the democracies, ours included, had shown the will to fight soon enough and had stiffened it with timely preparation, Hitler's madness might conceivably have been held in leash without war.

But if the overly idealistic have not learned that appeasement is not only not restraining poison but meat to the aggressor, the warhawks have not learned much either. They refuse to see or have not realized that the path along the brink was narrowed. Their slings and arrows are now equipped with nuclear warheads and to aim them wantonly down the other side is the bravado of fools.

Khrushchev is not exactly the western ideal of a reasonable man but he gave new evidence of not being a madman either. He knows how narrow the path along the brink has become and he must have watched with growing respect as Kennedy trod without faltering.

If he did there should be fresh hope and new impetus toward lowering other world pressure points still dangerously near the boil. But the hope should not be wild and giddy, for the impetus is bound to get bogged down again in the tedium of negotiation and the stubborn treachery of man's relations with man. It is the thrusting paradox of that peculiar substance called the human spirit that it can be summoned to the noblest heights of courage, sacrific and selflessness in a crisis—a crisis which need not have come if only those heights could have been approached without it.

It is this towering irony that Mariann of Laramie is rebelling against. She will learn to face tragedy, fear, sorrow, anger and even a good deal of danger because they are the stuff of life along with its bits of beauty, love and laughter. But what she and the rest of us must refuse to adjust to is the monumental folly of mankind's self-destruction and in the respite that has been given us we must refuse with a little more purpose and perspicacity than we have shown in the past.



While Dave Erickson prepares for sign-off following "The Late, Late Show," right, Jim Vaughn and Bill McGinnis, studio engineer, upbolt a rack to make way for a new switching unit at WCCO-TV, Minneapolis, Minn.

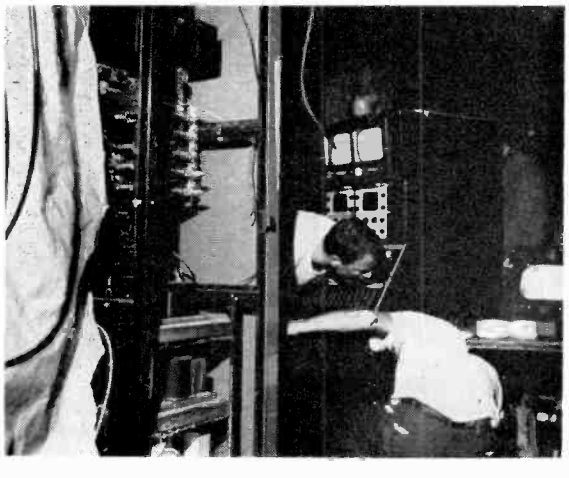
Sign-Off To Sign-On . . . The Switching Hours

As broadcasting stations update their equipment to keep pace with manufacturing developments, many engineers and technicians find themselves working in the wee hours of the morning—between sign-off and sign-on—to install new equipment without interrupting program schedules.

It takes black coffee and planning to accomplish the changeovers in the brief periods permitted, but the working crews always come through on time.

A photographer visited the studios of WCCO-TV, Minneapolis, recently and took these pictures of the squint, squat, stoop, and groan operation after midnight, as a new switching unit went into place.

Jim Vaughn and Henry F. Sheppard, Jr., supervisors, set the new unit in position, as Gene Brautigam (whose head you see above the unit) gives an assist.



Meany Foundation Created; Will Sponsor TV Series

Establishment of the George Meany Foundation to "further the understanding of the ethical principles by which all moral men live" was announced in New York this month. The foundation was created by trade union friends of the AFL-CIO president and has already chosen its first two projects.

Sponsorship of one program each year in "The Eternal Light" television series, produced under the auspices of the Jewish Theological Institute and broadcast weekly over the National Broadcasting Company TV network. This year's program devoted to the life of William Green, late president of the AFL will be seen on Nov. 25.

Sponsorship of a series of lectures at the Institute for Religious and Social Studies of the Jewish Theological Seminary of America. This series, under the general title of "The American Character: The Search for Self-Understanding," is already in progress.

The Meany Foundation has been established within the Herbert H. Lehman Institute of Ethics at the seminary.

Pres. George Harrison of the Railway Clerks is president of the foundation. Joseph D. Keenan, secretary of the Intl. Brotherhood of Electrical Workers, is treasurer. M. S. Novik of New York, the AFL-CIO's radio and television consultant, is secretary.

The foundation, its sponsors said, is "linked with the name of George Meany, whose commitment to principle and to the welfare of the working class is being met in the highest ethical tradition."

"The Eternal Light" series has for more than 15 years been recognized as one of television's finest public service presentations. It has often dealt with labor subjects, one of last year's offerings, "Young Sam Gompers," covered the early life of the AFL founder.

The foundation-sponsored program on Green—10 years after his death—will be entitled "Never Ask What Country." The script is by Morton Wishengrad, distinguished TV radio and stage writer whose play, "The Rope Dancers," was a recent Broadway hit. Broadcast time on the NBC network will be 1:30 p.m. (EST).

Future foundation-sponsored TV programs will portray the lives of other trade union figures, such as Philip Murray, late president of the CIO, or will deal with issues of vital importance to labor. After their network showing they will be available in film, tape or script form to schools, religious institutions, community centers, unions and independent radio and TV outlets.

Once Again, the Lesson is Proved: In an Election, One Vote Counts!

IF any lingering doubt remained about the importance of just one vote, results in the recent elections should serve to dispel it once and for all.

No fewer than 42 contests for senator, congressman and governor were won by less than 52 per cent of the total vote. In all, 509 races were held, so it works out to a ratio of one in 12 where a razor-thin margin prevailed.

Strangely, the close races balance out about evenly in favor of liberals and conservatives. From this, it's not hard to see how the switch of a few votes, or a larger turnout at the polls, might well have changed the basic character of the Congress.

For example, longtime Congressman Peter Mack of Illinois lost out to opponent Rep. Paul Findley who gained only 50.9 per cent of the vote in a redistricted area. Mack's COPE voting score was 52 right and none wrong in his seven House terms. Findley, in one term, hung up a 0-11 record. Mack's vote on key issues will be missed.

Another liberal, Rep. Frank Burke of Kentucky, was defeated by a conservative opponent who won only 50.7 per cent of the vote, and liberal Rep. Bob Cook of Ohio lost out when his foe notched 50.6 per cent.

Wilkes Thrasher in Tennessee, an enthusiastic supporter of health care under social security, was beaten by a medicare opponent who took just 51.1 per cent of the vote, and Rep. Blaine Peterson, a Utah progressive bidding for a second term, fell short, receiving 49.3 per cent.

Conversely, some staunch liberals got in by the skin of their teeth. Donald Fraser ousted longtime reactionary Rep. Walter Judd (Minn.), collecting 51.8 per cent of the vote, and another Minnesotan, liberal Alec Olson, drew 50.1 per cent in winning over a conservative.

In Ohio, Bob Secrest dropped right-

winger Tom Moorehead from his perch with 51.1 per cent.

In Pennsylvania, two incumbent Congressmen, liberal George Rhodes and conservative Ivor Fenton, had to fight it out as a result of redistricting. The result: Rhodes won with 51.3 per cent of the vote.

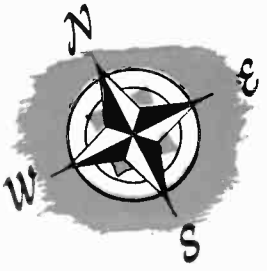
This story was repeated in many other House races. In the Senate, six contests were practically toss-ups. Moderate Alabaman Lister Hill beat off a surprising challenge by a ranting segregationist, taking 50.8 per cent. In Indiana, liberal Birch Bayh retired conservative Sen. Homer Capehart by winning 50.3 per cent, and in South Dakota, New Frontiersman George McGovern just nudged Joe Bottum with 50.1 per cent.

One of the Senate's leading liberal spokesmen, Joseph S. Clark (Pa.), retained his seat with 51.3 per cent of the vote, and former Health Secretary Abraham Ribicoff (Conn.) entered the Senate by that same percentage. Liberal Congresswoman Gracie Pfost (Idaho) challenged conservative incumbent Sen. Len Jordan, but lost out when Jordan got 51.0 per cent of the vote.

The importance of everybody's vote—of *your* vote—has never been underscored so emphatically. The losses of a Mack, a Burke, a Cook or a Peterson in Congress could be crippling if they hadn't been balanced by the victories of a Fraser, a Rhodes, an Olson or a Secrest.

Indeed, had a few more votes been cast for some defeated liberals, the 88th Congress may well have been the most progressive in years. And on the other hand, had a few less votes been cast for some victorious liberals, the next Congress could have been the most backward in years.

Next time around, keep this in mind: one vote counts; your vote counts.



CLUSTERS OF POLES DOT EARTH'S POLAR REGIONS

If the earth's poles were real shafts instead of imaginary points, the polar areas would look like pincushions.

Dotting these regions are the geographic North and South Poles, the geomagnetic poles, the principal magnetic dip poles where free-swinging, magnetized needles point straight down on us, and clusters of minor magnetic poles.

Best known, of course, are the North and South Poles, the ends of the imaginary axis on which the earth spins, the National Geographic Society says.

The geomagnetic north and south poles represent the terminals of a line running through a hypothetical magnet near the earth's center. The axis is tilted about 12 degrees from that of the geographic poles.

The north geomagnetic pole is near Thule, Greenland, and the south is in Antarctica, 791 miles from the South Pole. The geographical and geomagnetic poles are fixed points.

The actual magnetic poles, however, wander about according to changes in the earth's magnetic field. They seem to drift about the Canadian Arctic and the South Pacific near Antarctica without any known pattern of movement. These poles are not even directly opposite each other.

Ten years ago, the magnetic north pole was on the northwest edge of Prince of Wales Island in the Canadian Arctic. Since then, the pole has advanced northward across 60-mile-wide Barrow Strait to southern Bathurst Island.

The magnetic poles exist because the earth itself is a huge magnet surrounded by a magnetic field. The field is made up of invisible lines of force running roughly north and south. These lines can be pictured as billions of little wires, arching outward at the Equator but bending back to the earth's surface in both hemispheres. Some lines loop far above the earth in equatorial regions and enter the earth near the poles.

The areas where these lines enter or leave the earth vertically are the magnetic, or dip, poles. Thus the magnetic field is vertical, and free-swinging magnetic needles point down or up. This explains why an ordinary compass is useless in polar regions.

Because the earth's magnetism is irregular, the lines of force do not strike the earth's surface at a single point. So there are clusters of minor magnetic poles. Curiously, the north magnetic pole's cluster forms an ellipse; the south's a circle.

About 100 permanent observatories around the world, many temporary stations, and specially equipped airplanes constantly measure the earth's magnetic fields. Using the data gathered, scientists known as magneticians periodically bring world magnetic charts up to date.

Navigators use the charts to determine how far from true north their compasses vary at different locations. Hidden deposits of magnetic material, such as iron ore, also may affect a compass.

The earth's magnetism varies in the course of time. In the middle latitudes, electric currents high in the atmosphere cause changes of about one-fifth a degree between morning and afternoon. Forces deep within the earth cause changes in compass direction which may amount to 30 degrees or more over two or three centuries.

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 AND JUNE 11, 1960 (74 STAT. 208) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF The Technician-Engineer, published monthly at Washington, D. C. for September, 1962.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, International Brotherhood of Electrical Workers, 1200 15th Street, N. W., Washington 5, D. C.; Editor, Albert O. Hardy, 1200 15th Street, N. W., Washington 5, D. C.; Managing editor, None; Business manager, None.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) International Brotherhood of Electrical Workers (an unincorporated labor organization), 1200 15th Street, N. W., Washington 5, D. C.

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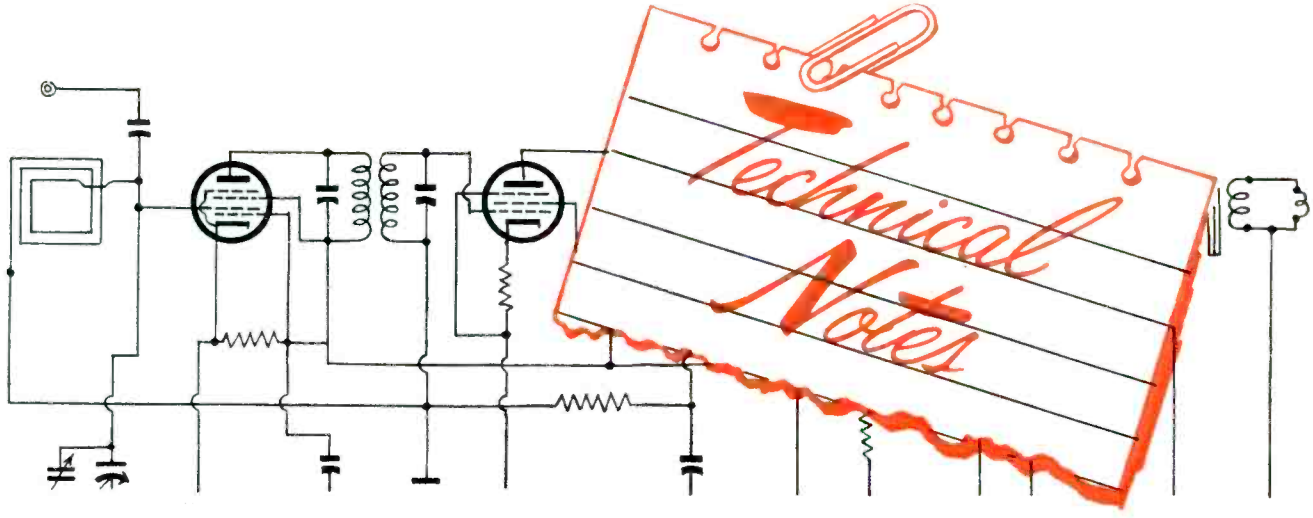
4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.) 12,700.

(s) ALBERT O. HARDY, Editor.

Sworn to and subscribed before me this 2nd day of October, 1962.
(Seal) LAWSON WIMBERLY, Notary Public, D. C.
(My commission expires September 30, 1967.)



G-E INTO HOME PAY-TV

The General Electric Co. and Home Entertainment Co. of America, Inc., (HECA), have announced jointly signing of a contract for development of equipment for a home pay-television system.

General Telephone Co. has been hired by HECA to install the cable system in the Santa Monica, Calif., area. Negotiations were being conducted for franchises in other areas.

HECA officials said they expected to have the system operational early in 1964.

Current motion pictures, stage shows, concerts, symphonies and sports events would be transmitted directly into subscribers' homes from the studios via cables installed by local telephone companies, HECA officials said.

"Some shows may cost as little as 15 cents," HECA said. "Others, like top Broadway shows and championship boxing matches, may cost $3.00. Motion pictures are expected to run for 75 cents to $1.50."

LABEL 'ALIEN' PROGRAMS

Propaganda programming, sponsored and paid for by foreign governments, is being broadcast by stations without any announcement of the foreign sponsorship involved, the FCC said recently in warning licensees to take "such action as may be appropriate."

The commission said that the "alien broadcasts include documentary films and other matter containing political propaganda or controversial statements distributed by foreign agents. Sec. 317 of the Communications Act requires stations to announce the source of such programming and further requires licensees to "exercise reasonable diligence" to obtain the necessary information to identify the sponsor, the commission said.

In addition the FCC pointed out, Sec. 508 of the act requires public disclosures where payments are made to persons other than the licensee for the broadcast of programs. "The foregoing is brought to the attention of commission licensees in order that they may take such action as may be appropriate to comply with the requirements of the act in this regard," the FCC said.

GREATER CABLE CAPACITY

On the basis of recent research, it is now possible to visualize the development of transistors so reliable as to remain in service more than 100,000 years, H. I. Romnes, president of Western Electric Co., told the Electronic Industries Association's 34th Radio Fall Meeting in Toronto, November 13.

The prospect makes it possible for the company seriously to consider installing transistorized amplifiers on coaxial cables at very close intervals to expand vastly their capacities, Mr. Romnes said. Such a development, he added, could make possible:

- Packaging of "thousands upon thousands of voice channels in a single cable" with such economy for the telephone user as to make it feasible for him to talk to distant cities as casually as he calls nearby towns today.
- Greatly increased frequency space for transmitting network television programs, educational and closed circuit television and, perhaps, pictures of persons engaged in telephone conversations.
- More frequency space for transmissions between electronic computers, for sending pictures and drawings, and for instantaneous long-distance printing.
- The installation of vital communications channels in coaxial cables with amplifiers buried deep in the ground to insure service continuity in the event of an emergency.

Mr. Romnes emphasized that these developments will not take place overnight "since much remains to be done to translate the known potentials of communications science into concrete designs.

"But these potentials are within our grasp," he said, principally because increasing attention to quality in

design, materials, and production provides us the assurance that we can match the unprecedented standards involved.

SPACE TRANSMITTERS?

A General Electric engineer, who specializes in future developments in the space field, suggests the great possibilities of direct television transmission from space satellites to home receivers.

Robert P. Haviland believes there is a possibility space satellites can be used as transmitters in the sky to cover whole continents with TV. He mentions, for instance, such wide and undeveloped areas of the world as South America, Africa and Asia, where television is almost nonexistent.

"You get a Syncom satellite up and, with the proper power and beaming of its antenna, you can cover all of South America," Mr. Haviland says.

Syncom is the term for a synchronous communications satellite orbited 22,300 miles above the earth so that its rotation is the same as the daily rotation of the earth. Thus it remains in the same relative position above a particular point on earth.

Mr. Haviland figures a transmitter radiating 10 kw, with a directional antenna, could cover the South American continent. With that amount of power, and the gain coming from a directional antenna, he says, home receiver antennas would not have to be much more elaborate than some used now by many TV viewers in suburban areas.

Mr. Haviland warns that the system he has in mind is a minimum service, "something like two hours a day." The limit is necessary to conserve power in the satellite.

He agrees the U. S. has no space vehicles powerful enough to orbit a satellite big enough to accommodate a 10 kw transmitter, although he thinks the time may not be far away for that development.

He feels the transmitting elements for 10 kw, with suitable revisions in design, could be carried in a 500-pound spacecraft. The power supply under present conditions would require 10,000 pounds, although new designs for solar silicon cells could reduce the amount to half. If there were nuclear power, the power supply element would need only 1,000 to 2,000 pounds, he said.

UHF Test Report Issued by FCC

The New York City experiments by the Federal Communications Commission were first reported at the Fall Meeting of the Institute of Radio Engineers on November fourteenth, at Toronto, by Mr. Jules Dietz of the Commission.

The Report is a summary of tests at some 900 receiver locations, utilizing 110 UHF/VHF receivers. At each location, a receiver was installed for about a month and then was moved to another, with all locations selected by the Census Bureau on a probability basis. All locations were within 25 miles of the Empire State Building transmitter, implemented by inclusion of all counties which were completely within that area and those parts of counties lying wholly within it. Emphasis was on specific households but a few receiver locations were institutions, such as hospitals.

The 29-page Report covers the results attained by the use of indoor and outdoor antennae, color and monochrome. Data reported by the installation crews was considered basic but householders' reports were dutifully included and punch-cards which evolved from the data sheets permitted swift and economical analysis. Approximately half of the householders would not permit a demonstration reeciver to be left on their premises. Winter weather, suspicious housewives, indifferent landlords, language barriers and the unavailability of a sizable portion of a family available for briefing were only some of the complications of the test. As Mr. Dietz said, the experiences "could very well form the basis for an encyclopaedia on human relations."

Six "grades" of reception were used as picture rating definitions; briefly they ranged from Grade 1 "Excellent", through Grade 6 "Unusable", with Grade 2 "Fine", Grade 3 "Passable", Grade 4 "Marginal" and Grade 5 "Inferior". Comparisons of the Channel 31 pictures with Channels 2 and 7 were charted as to "Overall Picture", "Overall Ghosting", "Thermal Noise" and "Man-made Noise". The UHF signal data showed overall ghosting was slightly higher, a degradation of picture due to thermal noise was higher but interference due to man-made noise was almost exactly equal to that observed on the VHF channels.

In sum, the tests showed UHF reception to be satisfactory and reliable in the New York City area, in a wide variety of locations and with simple antennae for either U or V.

STATION BREAKS

Local Union 4 Receives NLRB Advisory Opinion

A prolonged dispute of Local Union No. 4, IBEW, with WGNU, Granite City, Illinois, has produced an Advisory Opinion of some significance by the National Labor Relations Board.

As the result of activity involving secondary employers (advertisers), the Local Union was enjoined by the Circuit Court of Madison County, the temporary injunction was appealed—and the appeal was denied. The Union then filed an appeal with the Fourt District Appellate Court (Illinois). This was followed by its petition to the Board for an advisory opinion.

The issue in the court proceedings was the cancellation of three particular advertisers as the result of the Union's request for cooperation. These consisted of a large retail grocery chain and two wholesale distributing enterprises.

The Board's Advisory Opinion (AO-39, Aug. 23, 1962) referred to the *Jemcon Broadcasting Company* case (135 NLRB No. 48), and reiterated the NLRB's position that it "will take into consideration for jurisdictional purposes not only the operations of the primary employer, but also the entire operations of the secondary employers" in cases involving secondary activity by a union and where a question of violation of Section 8 (b) (4) of the Act is raised. It went on to say that each of the secondary employers in this case meets the Board's jurisdictional standards and, either singly or jointly, would presumably warrant the Board's assertion of jurisdiction.

It may be strange, but it is nevertheless a fact that the Board will assert jurisdiction in such cases as involve an unfair labor practice or a jurisdictional dispute (Sections 8 and 10 of the Act) but will refuse to act where Section 9 is involved, with the same employer.

SOAP BUBBLE TROUBLE

In Tucson, Ariz., a soap company producing a television commercial on its product hired a publicity man to find an Indian who could send up smoke signals promoting the soap. The publicity man canvassed Indian reservation after reservation but nowhere was he able to find an Indian who could send smoke signals. Finally, tired and exasperated, he asked one Indian, "Well, what do you do when you want to send a message to someone on the next reservation?" "Why," replied the astonished Indian, "I use the telephone. What do you do?"

CBS-TV COLOR POLICY

Broadcasting Magazine reports that "CBS-TV's policy of putting on color only if and when advertisers want it—and pay for it—appears firm." The network, it is reported, will colorcast one filmed special in coming months—"Tour of Monaco with Princess Grace," scheduled for February 17. This show (and another telecast on September 24) was an advertisers' "package" and not network-produced.

A CLOSING REMINDER

Be sure to attend your local union meetings. Mark the date of the next meeting down on your calendar.

LAST LAUGH

"A raise?... A raise?... Isn't that some sort of a crackpot phrase that Unions use, Miller?"