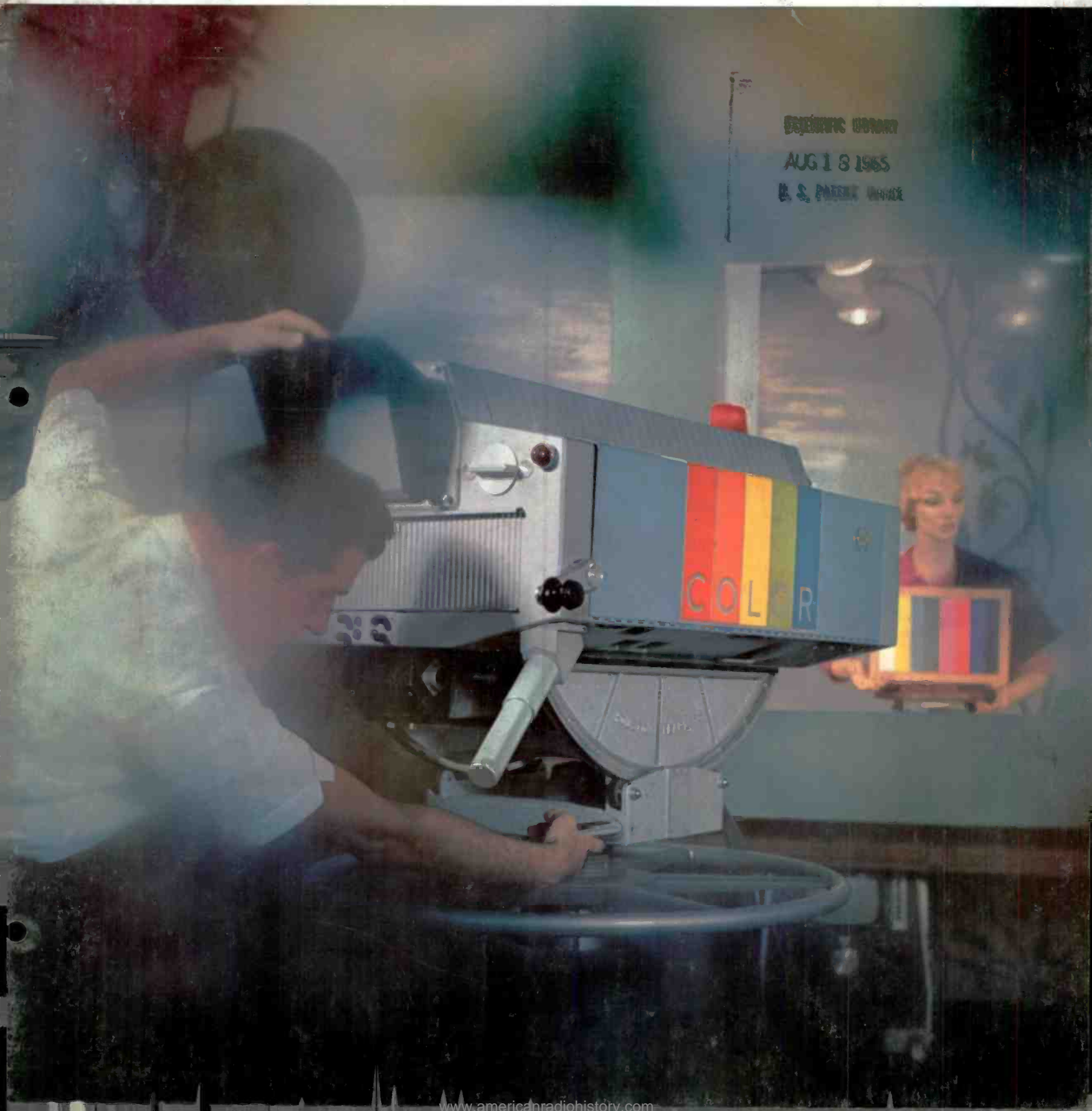
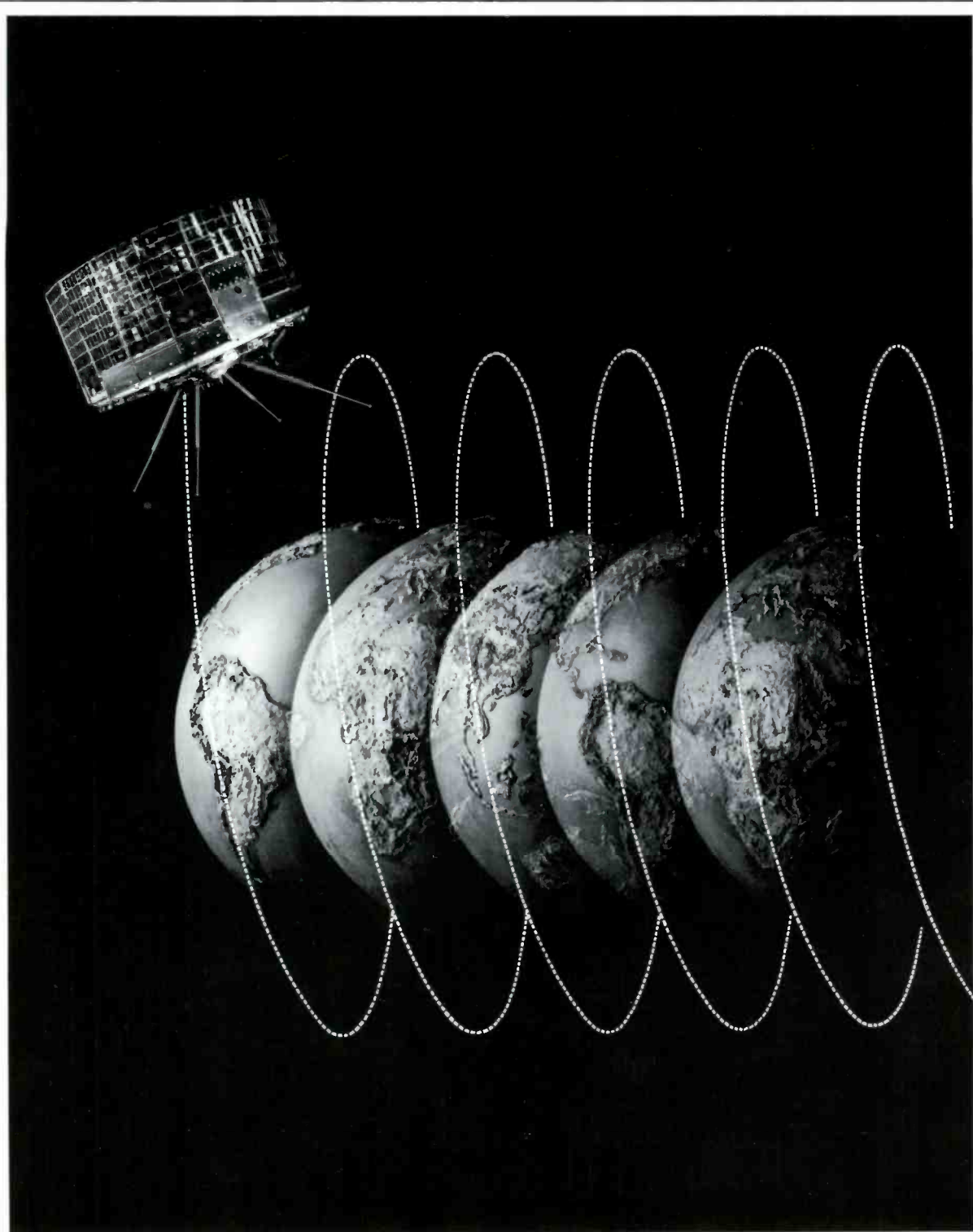


ELECTRONIC AGE

Summer 1965





An artist's conception of the orbiting TIROS 10 television weather satellite, which was launched on July 1 by NASA at Cape Kennedy in time for the 1965 hurricane season. TIROS 10 is the latest in the uniformly successful TIROS series—10 launches, 10 successes. It now joins other RCA-built satellites in giving the U.S. Weather Bureau a daily watch on the world's weather. TIROS 10 circles the globe once every 101 minutes in a near-polar orbit, and each day returns weather pictures of more than half the earth observed from an altitude of approximately 500 miles. For additional details on the TIROS series, see item on page 36.

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ELECTRONIC AGE



Cover: The TK-42 color TV camera, first to employ the four-tube concept that was pioneered by RCA, is now being produced for broadcasters. The new camera adds a separate monochrome tube, for maximum picture detail, to the three color pickup tubes in current cameras. The TK-42 produces richer hues and greater sharpness in color pictures and provides improved black-and-white pictures as well. For more about color TV, see page 18.

ELECTRONIC AGE

Summer 1965

Vol. 24/No. 3



SCIENTIFIC LIBRARY

AUG 13 1965

U. S. PATENT OFFICE

- 2 **The Communications Explosion** BY DAVID SARNOFF
An examination of the latest advances in communications technology.
- 7 **My First 30 Years in Broadcasting** BY BOB HOPE
Reminiscences by the noted comedian on his career in radio and television.
- 12 **The Spoken Word** BY THOMAS LASK
The popularity of nonmusical recordings is on the rise.
- 16 **Dial 859 for Greenland** BY EDWARD W. ATKINSON
International telex connects continents for space-age communications.
- 18 **The Burgeoning Color Television Industry**
A brief view of color television production — the world's fastest-growing industry.
- 20 **The Social Impact of Television** BY DESMOND SMITH
The widespread influence of TV on our way of life.
- 25 **This Electronic Age...**
A page of cartoons.
- 26 **Television Coverage of Gemini 4** BY STANLEY APPENZELLER
How NBC-TV telecast the flight of astronauts McDivitt and White.
- 32 **Computers and Legislation** BY THOMAS I. BRADSHAW
Computers help Florida lawmakers do a more effective job.
- 35 **For the Records...**
News of recent outstanding RCA Victor recordings.
- 36 **Electronically Speaking...**
News in brief of current developments in electronics.

The Communications Explosion

RCA's Board Chairman examines the latest advances in communications technology and suggests changes in policies and regulations to safeguard U.S. leadership in global communications.

by David Sarnoff

Despite the formidable advance of our technology in recent years, we are only in the first stages of a communications explosion that will invalidate many of the historic premises on which American leadership in communications was based. The best of our combined talents will be required to channel the force of this explosion for the benefit of our country and the free nations.

To be properly understood, the communications explosion must be related to other major "explosions" of our generation which are also having a profound impact on society. The first, and most widely discussed, is the population explosion. Only 35 years from now, there will be 6 billion people on this earth. The population of Asia alone will exceed all of the people inhabiting the earth today.

The second explosion is in science and technology, and its occurrence at this moment in history is particularly fortunate. Otherwise, it might be impossible to sustain the impending increase in population and still preserve any semblance of a rational social order.

The primary significance of the scientific explosion is that it will give man the capability to bend nature to his will, to alter life processes, and to loosen the fetters of gravity that bind him to the immediate vicinity of earth. For the first time, man will acquire dominance over his environment.

His ability to harness and exploit the opportunities offered by this new dominance will depend, in turn, upon communications, which has given us our third explosion. I believe this will be the most significant of the three explosions because the basic purpose of communications is the transmission of intelligence. Without this capability, modern society could not function.

Electronic communication has already given man the means to extend the capabilities of his mind a thousandfold, to bring within grasp the world's recorded knowledge and to reach for the knowledge hidden in other worlds. It has provided him with instruments and channels to transmit this knowledge in virtually any form to any place or person and to direct other instruments hundreds of thousands of miles away. It has also changed the character of our communications services.

This article is extracted from an address by Chairman David Sarnoff of RCA to the Armed Forces Communications and Electronics Association in Washington, D.C., on May 26, 1965.

In my early days in communications, there were three distinctly separate services, transmitted in different ways and used for different purposes. There was telegraphy for point-to-point record messages. There was telephony for point-to-point voice messages. There was radio broadcasting for mass communications.

These services were logically segregated by law, by technical limitations, and by usage. But today, the electronic pulses which we use to transmit information make no distinction between voice and data, words or images. They are all so many bits of energy. The broad-band channels through which they flow can accommodate them all.

In the past few years, coaxial underseas cable systems have been handling a mounting combination of voice and record communications. Now, we have communications satellites that accommodate voice, record, and television indiscriminately. Soon, transistorized underseas cables will do the same.

By the 1970s, new devices, circuits, and transmission channels — among them radio circuits in the millimeter-wave range and laser beams — will be coupled with satellites and other advanced communications techniques to provide thousands of additional channels for the world's voice, telegraph, and television services.

At the terminal points, instruments which are in existence or in development can handle voice or record messages interchangeably. Communications between man and machine, and machine and machine, will become as extensive as man-to-man communications are today. It will be possible to transmit any and every type of information over the same channels, in virtually unlimited quantity and at incredible speeds, to and from all points on earth.

Inevitably, change of this magnitude creates problems which cannot be resolved simply by drawing upon the experience of yesterday. Developments are too radical in their nature, and the pace at which they come is too swift, for the past to serve as an effective prelude to the communicating future. We must look for entirely new procedures, attuned to the realities of the Space Age, if our communications services are to function in harmony with the new technology and if America is to maintain its leadership in this vital field.

Three years ago, in an address to the American Bar Association, I called attention to the anachronisms of a

communications policy which continued to enforce separation of voice and record transmissions and the channels over which they traveled. Since then, many other voices in industry and government have been raised against such clearly outmoded regulations which impede our progress and hamper our leadership in world communications.

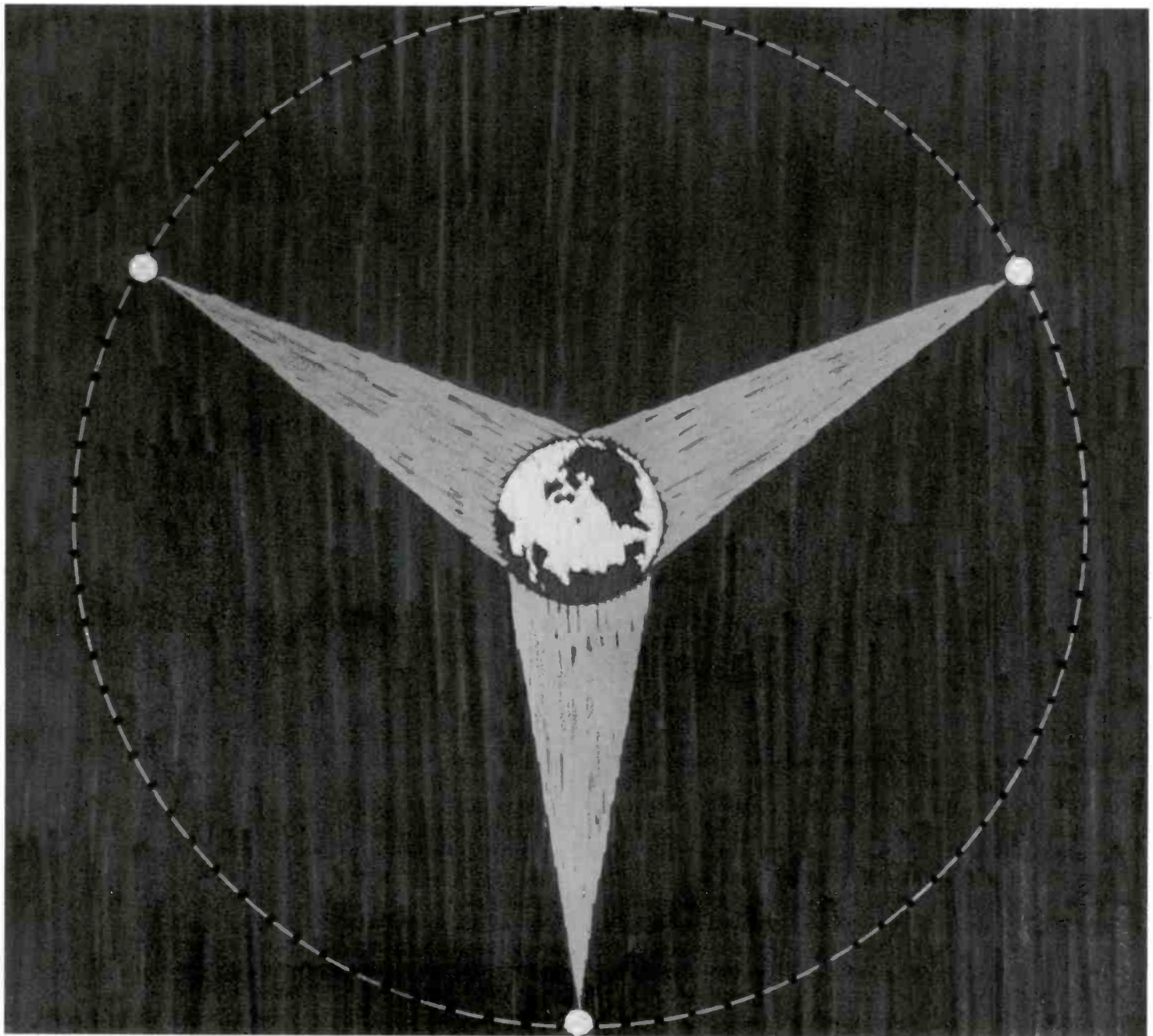
As we operate today, a person or organization in this country wishing to talk, telegraph, or transmit data at the same time between the United States and overseas cannot do so over the same public service. He must go to one place and one carrier for voice communications and to another place and carrier for record communications. Furthermore, the record carrier is not permitted to interconnect with the public telephone system in this country.

The exception to this is the large organization with resources to lease its own private channels. These leased



David Sarnoff

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Synchronous satellites positioned as shown could cover the globe with a wide variety of communications and could broadcast television programs directly into the home.

systems have recently been permitted to carry both voice and record traffic and to interconnect with domestic telephone circuits. For the general public, however, there is no such convenience.

But even if we demolish these barriers, there are broader issues to be resolved which affect America's position in international communications. In this satellite era, it takes only a split second to communicate any type of intelligence — voice, data, facsimile, or television — to and from any point on earth. One half of this sliver of time involves communications from other countries, the vast majority of which speak as a single unit through state-controlled monopolies. Our half — the United States — speaks with a multiplicity of voices because of the historic competitive nature of our international communications structure.

The American common carriers, each competing with the other, must negotiate separately with communications monopolies in other countries in order to provide international service to their customers. The foreign organizations have the advantage of unity in bargaining. We are weakened by a factor of six — the number of our authorized international carriers.

Even the addition of the Communications Satellite Corporation to our international communications structure has failed to resolve the problems that grow out of procedures inherited from an earlier time. The different American common carriers will, of course, use the Comsat channels, but they will still carry on separate negotiations with the foreign monopolies in such matters as the division of revenues and the use of circuits. The fragmentation of service has simply been extended into space.



Live on NBC-TV via Early Bird satellite: Pope Paul VI speaks from Rome . . . Model displays French fashions . . .



Dr. Michael DeBakey performs heart surgery in Houston . . . while doctors in Geneva watch operation on TV.

The existence of such a situation does not, of course, reflect unfavorably in any manner upon Comsat itself. In its brief period of existence, face to face with all the unknowns of operations in a new environment, Comsat has done a remarkable job in terms of both organization and technology. It has already given America a formidable early advantage in satellite communications. The efforts of all of us should be concentrated on developing a climate in which Comsat can function with maximum efficiency and in harmony with other elements in our communications structure.

There is now a different operational environment for satellite communications than had been anticipated when legislation on the subject was enacted.

When Congressional hearings were conducted in 1961 and 1962, the estimated costs of a complete system — including the development program, the satellites, and ground stations — were extremely high. The technology was complex. The reliability of booster rockets was uncertain, with a possible ratio of two or three failures for every successful orbital launching.

As far as anyone could foresee, it appeared certain that one global system would probably do the job for a long time into the future, and that satellite communications was neither technically nor economically feasible for any but the richest and most technically advanced nation to undertake.

Today, as General Jackson said at New Orleans, we have elevated our sights lower. A satellite booster rocket now costs as little as \$3 million, and the chance of a successful launching approaches 100 per cent. The technical complexity of satellites has been simplified to such an extent that a single satellite may cost as little as \$1 million. Depending upon its function, a ground station can be built at a cost ranging from \$2 million to \$6 million.

The costs and the technical requirements for a satellite communications system have thus diminished until they are well within the capability of many nations that possess relatively moderate industrial and technical resources, not to mention nations whose capabilities approach our own.

Many of the underdeveloped nations, in addition to the Soviet Union and its satellites, have chosen to remain outside Comsat. We can expect that, ultimately, Russia will set up a satellite communications system competitive to our own and offer it to other nations on favorable terms determined more by political than economic considerations. When this happens, we will be challenged for communications leadership on a global scale.

Nor is this the only quarter from which competition may come. The Western European countries are working together on space projects through their own joint enterprise, the European Launcher Development Organization. Some of its members have already voiced opposition to adopting a position in any way subservient to the United States in the field of satellite communications.

Western Europe unquestionably has the capability to establish a communications satellite system of its own, and it is entirely possible that such a system might be in operation within the next five years. Finally, of course, there is always the possibility that General de Gaulle might decide that the language of space should be French, and not English or Russian.

Only five years from now, interim agreements between Comsat and 45 participating nations for the direction and operation of the satellite system will be up for re-examination. We will have to negotiate a new compact under different circumstances and possibly vastly altered bargaining conditions.

Faced by this prospect of increased competition from abroad, America cannot, in my judgment, successfully operate a system of global communications with one company responsible for international voice transmission, five others for international record transmission, and with unresolved jurisdictional lines between the single American satellite entity and all the international communications carriers. We require a fundamental change in the policies and the regulations under which we now operate.

If, despite the recent developments in technology, and the new circumstances they have created, our government still elects to maintain a competitive pattern at the American end of international circuits, then let us at least make certain that it is truly competitive. To accomplish this, all international carriers should have total and unrestricted access to all channels of communications, without regard to whether they are voice or record. They should also have complete interconnection with, and uninhibited use of, domestic facilities. In this way, we can at least make far greater use of the modern tools available to us and better serve the growing and changing public needs.

At the same time, a clear regulatory distinction should be recognized between the functions of Comsat and the communications carriers. It should also be recognized that Comsat was established to function as a "carrier's carrier," neither dealing directly with organizations not authorized for the service of communications nor pre-empting facilities which are indispensable for providing that service to customers.

There is a second alternative, which is the practice followed by most foreign nations. A single government entity would take over and operate all our communications facilities. This would be counter to the deeply rooted traditions of American private enterprise. I would be very much against it. So would most Americans who believe, as I do, that government ownership and operation are not necessary or justified where, as in this instance, private enterprise can do the job efficiently and serve the public interest adequately.

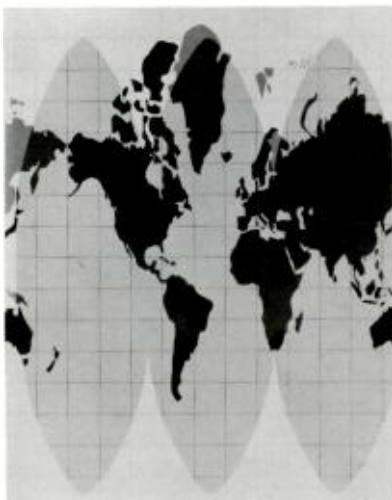
In 1962, I suggested a solution in keeping with our historic tradition of private enterprise in American communications. I proposed the creation of a single, privately owned American company, uniting the facilities and operations of the present competing U.S. carriers — both voice and record — in the international communications field. This company would be completely independent in its policies and operations, subject only to appropriate government regulations.

This unified company would be able to render an efficient, complete, and economical international communications service to the public with all the advantages made possible by modern technology.

It would permit the United States to deal on equal terms with foreign government monopolies.

It would simplify relationships with Comsat to the benefit of the Unified Carrier, Comsat, and the public.

Darker areas on map show the 45 countries that are initial participants in the international joint venture to establish a global communications satellite system, managed by the Communications Satellite Corporation. Membership is open to additional countries belonging to the International Communications Union.



It would advance and strengthen both the voice and record services now rendered to the public.

It would avoid the danger of the single voice carrier capturing the traffic of the competing record carriers — a danger that will develop if A.T.&T. is permitted to render both record and voice services.

It would give new cohesion to our entire communications structure and automatically solve the problem of providing interconnection for the flow of international traffic with the established domestic telephone facilities.

With our communications structure thus in order, we would be in a stronger position to take advantage of another great opportunity that technology will soon offer. It may be as significant as the orbiting of the first communications satellite itself.

Within a decade, and possibly less, I believe it will be technically feasible to broadcast directly into the home from synchronous satellites. All of the basic components and technology already exist for radio and television broadcast transmitters to operate in space.

These would be high-power satellites, weighing about 5,000 pounds, and powered by nuclear reactors of the same general type as the smaller experimental SNAP 10A. These reactors may well generate up to 30 kilowatts of power, sufficient to transmit three separate radio and television signals directly to home receivers on earth. They would also permit a tremendous expansion of every other type of communications service.

Placed in synchronous orbit over the equator, each satellite could broadcast to an area of 1 million square miles, covering such nations and regions as Brazil, India, Western Europe, or the United States. These satellites would operate in the UHF TV band. To receive them would require only minor modification in the home receiver and redirection of its antenna. A six-foot antenna would be sufficient to receive a clear television signal in the home. The total cost of adapting home receivers and antennas would be minimal.

With three such satellites — together costing about \$30 million, exclusive of ground stations — three TV channels would be available through each satellite to beam programs to the entire United States and north into Canada. To purchase a single leading VHF television station now

operating in a major American market would cost approximately as much as this entire three-satellite system.

Today, the three American networks spend approximately \$50 million a year to lease 53,000 miles of circuits to transmit programs to their affiliated television stations. These costs are only for regular interconnecting facilities for networks. Additional millions of dollars are required for special feeds. It is, therefore, not difficult to visualize what effect direct broadcast satellites can have on the economics of broadcasting.

For countries such as India or Brazil, where there is urgent need of a national television network to educate a growing population, a satellite broadcast system offers a most promising solution. Its cost would be perhaps half of the minimum needed for the present type of ground-based broadcast service.

Whether used for education, entertainment, or political indoctrination, direct broadcast satellite systems will ultimately be within the technical and economic reach of many nations, and they will penetrate many barriers, with unpredictable social, political, and economic results.

What will happen when countries can broadcast directly into the homes of other countries — when the U.S.S.R. can televise to New York and Seattle and the United States can broadcast directly to the citizens of Moscow and Kharkov? What forms of jurisdiction must be established to prevent the television spaceways from degenerating into a confusion of sounds and images? Again, how do we preserve American interests and assure continued American leadership in the new era of space communications?

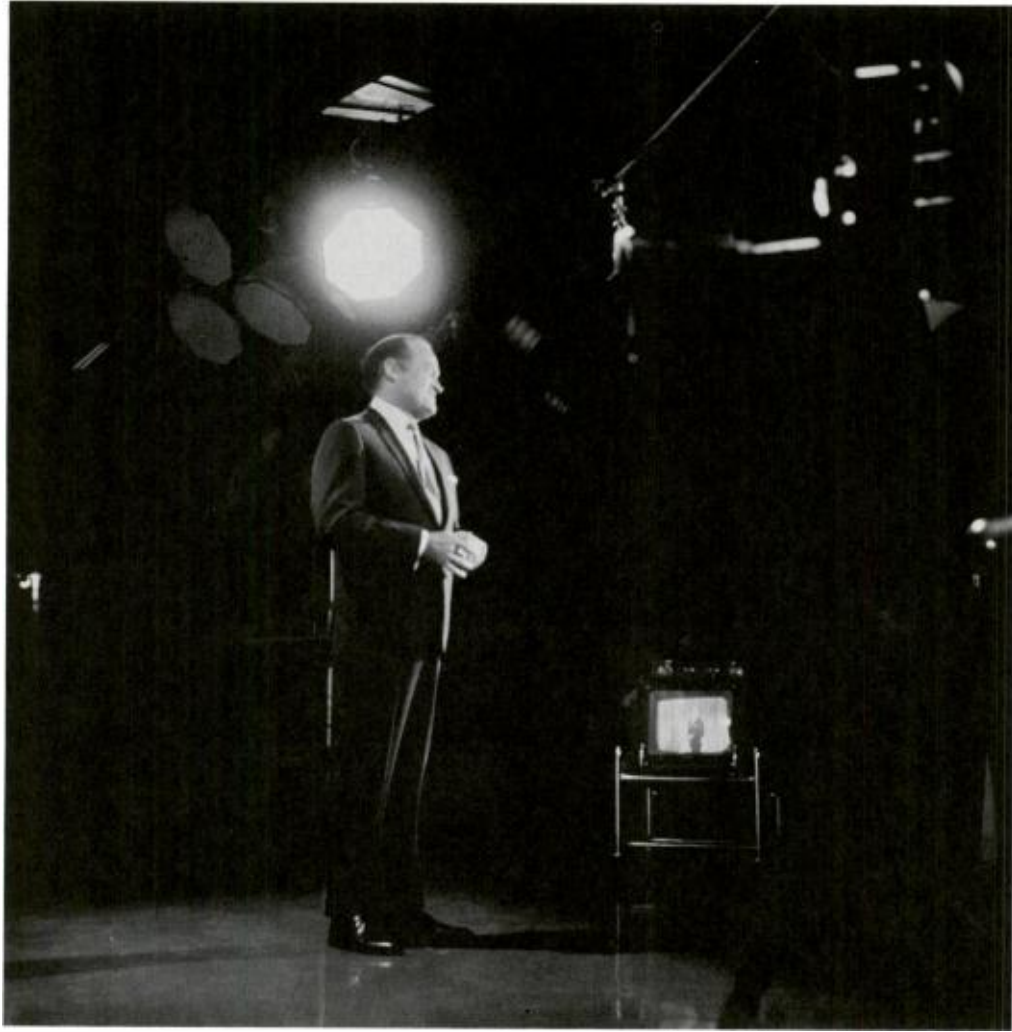
In 1962, I suggested that the way to achieve these goals was through the establishment of a Unified National Communications Policy suitable to our current and future needs. Such a policy should recognize the fact that competition in international communications is no longer within nations — it is among nations. I believe the need is even more imperative now than it was three years ago.

Fortunately, a high-level intra-governmental study is now under way to make recommendations to the Congress for an international communications policy for this country. I hope that out of it will come proposals that can be translated into legislation which will permit our country to utilize every communications resource at its command.

When America sets forth to achieve a national objective, there is no nation on earth that can equal its capabilities. We established this decisively almost a quarter of a century ago, when our combined industrial and military resources created the most effective instrument for military victory in history. Despite a late start, we are proving it again in the exploration and conquest of space.

Today, when the means for transmitting and receiving intelligence extend to every corner of the globe, the maintenance of our communications position in space and elsewhere must command the highest priority. It is a fact of 20th century life that the nation which leads in communications is also equipped for leadership in many other crucial areas of national and international endeavor.

America must continue to play the decisive role in shaping the force of the communications explosion. It can do so if our vision and our policies keep abreast of our science and technology. ■



MY FIRST 30 YEARS IN BROADCASTING

by Bob Hope

One of America's favorite comedians reflects on his career in radio and television.

Even though I hate to let work interfere with my true profession — golf — NBC has been my home away from home for almost half my life.

This all started in the 1930s when I accepted a few guest spots on Rudy Vallee's Thursday night show on what was then called the Red Network (can you imagine the trouble you could get into now with that name?), and before you could say "Bing Crosby" I was brushing my teeth with Pepsodent and helping General Sarnoff send out "SOS"s in Morse code on his telegraph key.

The National Broadcasting Company and RCA have been good to me ever since. Just think — a chicken like me playing on the same network with the NBC peacock.

“...radio really gave me my first chance to reach millions of people all at once.”

Anyway, back in the 1930s, I was making a movie called “The Big Broadcast of 1938.” You all remember that — the first major picture which didn’t win me an Oscar. And they say history repeats itself. It’s 27 years and I still haven’t won one. I’ll give the Motion Picture Academy one more 27-year period to make amends. Believe it or not, I have made 49 pictures since then — and in the latest I play Tuesday Weld’s father. It reminds me of my own high school days — when my father used to drop in to see me — on his way to class. Boy, I wish I were 25 years younger — starting college again. (All right. If there’s anything I hate, it’s a reader who counts.)

To get back to “The Big Broadcast of 1938” — that’s when I sang our theme song “Thanks for the Memory” for the first time. And do I have memories about my days on radio and in television. Incidentally, General Sarnoff, who is the father of television, can be proud of this great new entertainment and information medium. This is really a wonderful world — what with television and computers, and nuclear weapons and astronauts who walk in space. The world may destroy itself, but we’ll all be able to watch it on television.

Things have really changed since I started with NBC in the 1930s. For instance, there are no more plain doctors today, only specialists. Remember the old eye, ear, nose, and throat man? He’s now a quartet. And doctors have the most modern equipment. I know one doctor who uses a computer just to figure out his patient’s bills.

But seriously, radio really gave me my first chance to reach millions of people all at once. Or to put it another way, radio was the first time millions of people had a chance to switch off their dials at the same time. Before radio, I had had a varied career as a tap dancer, a motor company clerk, a boxer, a newspaper reporter, a sometime comedian and saxophonist, and a vaudevillian. The meals weren’t too regular; but then we made it with an act in the show “Sidewalks of New York.” From there I moved to Newcastle, Ind., became a “single,” and was booked into the Stratford Theater in Chicago. More vaudeville followed. You remember vaudeville. That’s the thing Milton Berle and I killed.

The only trouble with vaudeville and moving around from town to town was that it wasn’t good for my golf game. So I settled down in New York in 1933 and played in “Ballyhoo,” “Roberta,” the “Ziegfeld Follies,” and “Red, Hot and Blue,” and sharpened up my chip shots.

While I was playing in “Roberta” in New York, a young dancer named George Murphy (who is now doing a soft-shoe routine in the U.S. Senate) introduced me to a singer named Dolores Reade, whom I immediately retired to the job of being Mrs. Bob Hope.

By this time, my putter had become as hot as Jack Nicklaus’ drives, so we moved out to California where I could really put time into my backswing.

Well, I started in radio in 1938 with NBC — and I feel a little like an astronaut out there in space, tied to the capsule. It’s 27 years later, and now RCA is in the color television, computer, and other businesses we weren’t thinking much about back then.

Incidentally, for a minute I almost tuned out that space walk, which I watched on NBC television. I thought it was a Lloyd Bridges re-run. Actually, there’s nothing unusual about walking in space. Dean Martin does it all the time — without a capsule.

Twelve years after I started on NBC radio, television became inevitable, and, in the spring of 1950, I made the orthicon tube scene. That first show was done from the roof of the New Amsterdam Theater on 42nd Street, only a few blocks from where I had started on Broadway in the 1930s.

It is now 15 years and several million miles later, but the memory of that first television show is indelible. Now, for the first time, millions of Americans could watch *and* hear, and switch you off with your mouth open. But I have been very lucky, because Chrysler now lets me into all these homes every week, starting in the fall for the third straight year.

Of course, the really high spot in my television season has always been our Christmas tour, enabling me and the gang to visit with thousands of American youngsters around the world who are at lonely outposts defending our way of life so that the rest of us can enjoy the privileges of this great country. They tell me we have traveled more than 2 million miles since we started these Christmas tours — and I figure I’ve covered at least 1 million just driving to and from the airports. We have been to Germany, Alaska, Korea, Greenland, Okinawa, Japan, Hawaii, Greece, Turkey, Libya, Crete, Italy — to name just a few — and last year we were honored when the Defense Department allowed us to entertain our valiant troops in South Vietnam.

The importance to America of what these young fellows are doing there is so great that this season we decided to devote two programs of our tour to the southeast Asian part of the world. I have never been so proud as to have been permitted to perform before them.

Incidentally, while we were on tour recently, I heard words of praise from the son of a soldier whom we had entertained in North Africa in 1942. I said to him, “I hope your great-grandfather caught me at Appomattox.”

And flying around the world as we do reminds me how different things are now than they were when I started on NBC. Today, the traveler is pampered beyond words — and the competition is so intense among the airlines that the next thing will probably be floor shows, “live,” at 30,000 feet. Every stewardess will have to be able to sing and dance, and pilots will keep a joke file for emceeding the show. Of course, the best place to try out a new act may be the flight from New York to L.A. At least the audience won’t be able to walk out on you.



1938: A comedy routine with Jerry Colonna.



1944: Exchanging "compliments" with Bing Crosby.



1944: With Lt. Robert Sarnoff, Frances Langford, Tony Romano, and Jerry Colonna in New Caledonia.



1946: Receiving Medal of Merit from General Eisenhower.



1947: Frank Sinatra sings as Hope follows script.



1950: Duet with Dinah Shore.



1952: President Truman presents scroll signed by thousands of GIs and top U.S. military commanders.



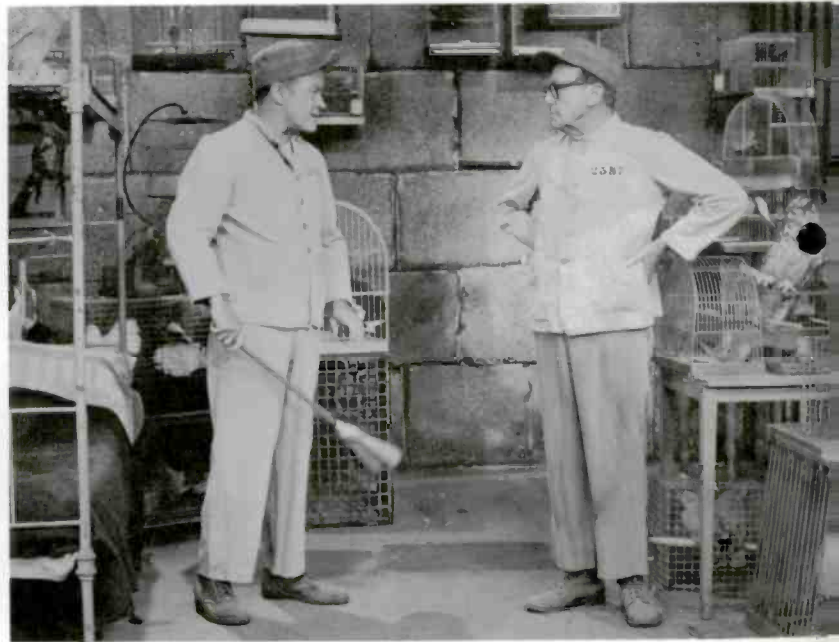
1953: Accepting a special award from Cecil B. De Mille at Academy Awards dinner.



1957: Janis Paige lends a hand on a Bob Hope comedy special.



1961: With Jayne Mansfield during Christmas tour in Alaska.



1962: Comedy sketch with Jack Benny.

And talking about the new look in airlines, I understand that one outfit is so concerned about status symbols for its passengers it's ordering oxygen masks in the latest fashion colors — mink-trimmed for first class and plain for tourist.

Despite the large number of hours I have put in traveling back and forth between coasts, and overseas, I always feel most comfortable and most at home at the NBC studios in Burbank where we do our shows. When that little red light pops on the latest version of the image orthicon, it means we're ready to go on the air — and even though I've done more shows in radio and television than I'm ever going to try to add up, I get the same thrill today as I did back in the 1930s when our announcer would cup his hand behind

one ear and the director would point at me from the glass-enclosed control room.

And none of this would have been possible if General Sarnoff hadn't invented RCA and RCA hadn't spawned NBC to help sell the "music boxes."

Thanks to NBC radio — and television — we have been able to travel the world, bringing entertainment to the farthest reaches of the globe. And I have had more thrills than a fellow should be allowed in addition to the sheer privilege of coming into American homes week after week for all these years.

But let's face it. We're just starting. With the Early Bird satellite and all the other new communications devices coming off the drawing boards, television has become a truly



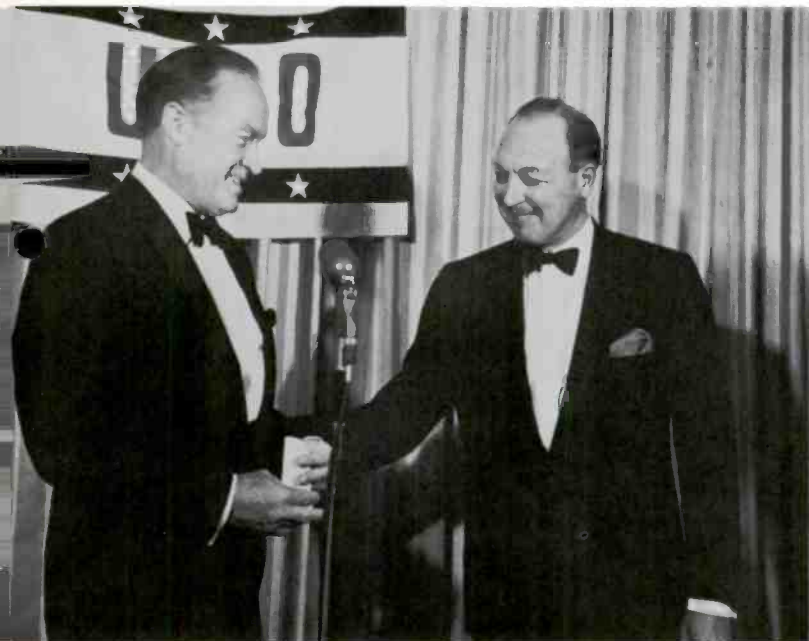
1958: In Moscow to film a Bob Hope TV special.



1959: Entertaining U.S. troops in the Mediterranean area.



1960: Singing with Perry Como and Ginger Rogers.



1963: Congratulated by NBC's Robert Sarnoff at a USO award ceremony.



1963: Beatnik skit with Dean Martin on Bob Hope TV special.



1965: Presentation from A. Louis Read, Chairman of NBC-TV Affiliates Board of Delegates.

international medium, capable of bringing the great American dream into millions of homes around the world — and capable also of bringing other cultures to the attention of our people. This may have been a gleam in somebody's eye when I first walked up to a microphone 30 years ago — but now it's a reality. And this is the really exciting challenge of the years ahead. A great force for good, television — and radio, too — already has had more impact on the lives of the citizens of this world than any other communications medium known to man in the past. We will use it wisely. And I, for one, hope to be a part of both TV and radio for the next 30 years as I have fortunately been in the past 30. ■

THE SPOKEN WORD

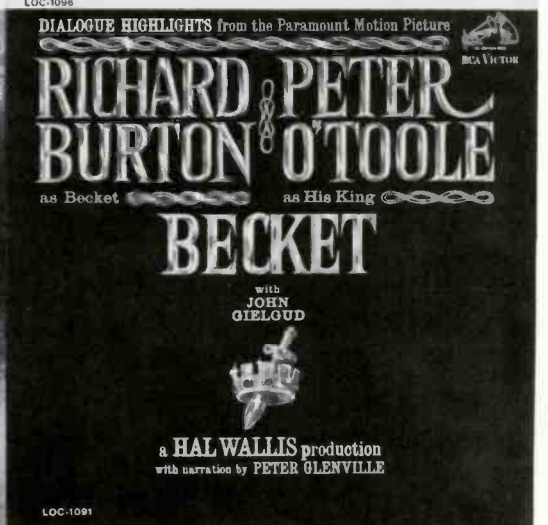
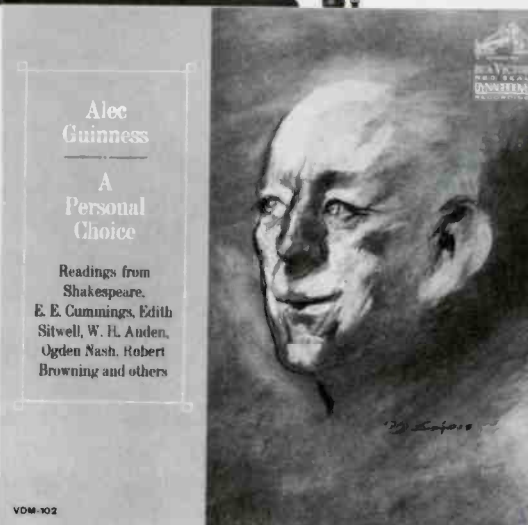
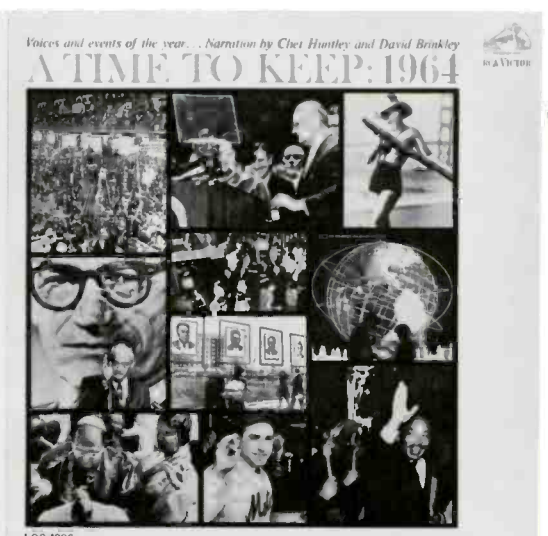
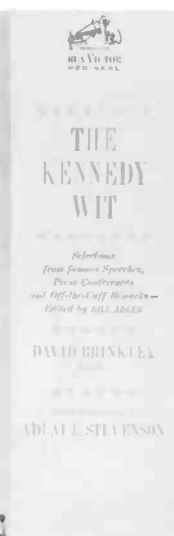
Spoken-word recordings are available in a broad spectrum of subject matter and are steadily increasing in popularity.

by Thomas Lask

If you say "spoken word" — a category that includes all nonmusical disks — to the average record buyer, he will snap back with "Dylan Thomas," a poet of golden voice and Byronic posture. To be sure, Thomas is to the spoken word what Babe Ruth was to the home-run ball. But Ruth and the home run were not all of baseball, and Thomas is not all of the spoken word.

There are enough variety, range, and accomplishment in these disks to please virtually every taste, sensibility, and mentality: history, past and present, often by its movers and shakers; literature, classic and contemporary, frequently in the voice of the person who made it; plays from O'Neill to Albee to Noh plays of Japan, many of them original-cast performances, the kind that will feed the nostalgia of Broadway in decades to come; comedians and jokesmiths; foreign-language recordings that teach language and literature, including the Hebrew and the Russian. There are "how-to" disks in great number from stenography to salesmanship. There are maverick recordings for the eccentric taste. One comic record is built around the structure of the stereo set. And there is a disk on natural childbirth.

In one area, the spoken word has reached a height not equaled anywhere else in the industry. A British company



has recently finished producing all the works of Shakespeare, all 37 plays plus poems and sonnets — the greatest single literary legacy in English. This represents 40 albums and 136 individual disks and an untold amount of organization. It would be like doing all the operas of Verdi, for example, or all the symphonies of Haydn. (An American company is in the process of putting out its own complete Shakespeare.)

Unlike the music makers, who offer the same 50 pieces (there are at least 15 recordings of the “Pathétique” and 20 of the Beethoven Fifth), spoken-word disks pay as much attention to contemporary poets, some of them “far out,” as they do to those who are household words.

None of this should be taken to mean that the spoken word is justified only on a historical basis or only on some lofty intellectual plane. These records are fun to listen to, and part of the fun is that no one can tell at what point the enjoyment will come. To enjoy John Gielgud in “The Ages of Man,” for example, or Nichols and May in a romp through one of their shows, is a predictable experience. But would anyone suspect the enjoyment that lurks in such titles as “The Sermons of John Donne” and “Héloïse and Abelard.” Yet, the first is an extraordinary rendering by Herbert Marshall of Donne’s preaching. They are less sermons than the ruminations of a man pondering on his own impending death; one can feel the nerve ends of the mind laid bare. In Mr. Marshall’s half-whispered words, an agonizing spirit is revealed.

The letters of Héloïse and Abelard provide drama of another sort. These lovers, now irretrievably parted, linger on the past. She is unwilling to free herself from the thoughts of remembered joys. He, though insisting that she bury the past, cannot quite let go either and wants to maintain the emotional hold he has over her. Little of this is said openly, but the psychological twists and turns, the passion that courses beneath what is said make for a fascinating document.

Take a bit of autobiography. On a two-record album, Bertrand Russell talks about his life. Mathematical logician, philosopher, and general goad to society, Russell is certainly not an unknown figure. Books and articles by and about him tell all that an average man is likely to want to know. Yet, at one point, in his reedy, scratchy voice, Russell remarks that as a child he lived in the house of Lord John Russell, author of the Reform Bill of 1832. Suddenly, the listener is startled by the knowledge that this is the voice of a man who shared a house with someone who was alive when George Washington was President of the United States.

Much delight can be had, too, in hearing thoroughly professional actors fashion a piece of prose or verse as a sculptor shapes a bit of clay: Ralph Richardson reading Proust or Ed Begley reading Whitman or Julie Harris dealing with Emily Dickinson.

Word albums are, of course, great preservers. They fix for the future not only the meaning but the quality of a person’s art or utterance. The death of Sir Winston Churchill last January sparked a whole host of albums, containing the famous voice in even more famous speeches. The material had a tendency to overlap, but the fact is that the speeches and speaker were the stuff of history, and

we need only think of how much poorer we would be minus the voice, and with the words buried in some thick book on European history. The popularity of “The Kennedy Wit” was due in great measure to the circumstances of his death, but the recording will certainly give future ages some notion of his grace and personality, and why it was that young people felt a special affinity with their President.

In preserving the voices of modern poets, the spoken word has compiled a unique treasure. The entire spectrum of poets writing in English (British and Canadian as well as American) has now been captured on records. They are not necessarily the best readers. W. H. Auden sounds as if he were reading with a boiled potato in his mouth, which he could neither swallow nor get rid of. But, on the other hand, no one can get precisely that dry, brittle quality of T. S. Eliot, a voice marvelously suited to so much of his poetry, or the rough, countryman manner of Robert Frost. In Frost, the style was partly a mask, but it indicated how Frost wished to be heard. There is Edith Sitwell’s imperious manner and Sandburg’s very personal way. It is an eye opener to hear the singsong, incantatory style of Yeats in the few readings that are available. Poetry may not have a wide appeal in America, but records supplement



Alec Guinness (left) and Roger Hall, Manager, Red Seal Artist and Repertoire, of RCA Victor Record Division, discuss Guinness’ recording of poetry selections for “A Personal Choice.”

the printed book in making the work of the poet available and in keeping his name before the public.

There is scarcely a noted Shakespearean actor of our day who is not to be found somewhere on disks, and some of the most illustrious and highly acclaimed portrayals have been captured on vinylite: Olivier's Richard III and Othello, Gielgud's Hamlet, Claire Bloom's Juliet, Scofield's Lear. Richard Burton's more recent Hamlet did not please everyone, but future generations will be able to get some idea of what the furor was about. A famous characterization of a generation ago, Paul Robeson's Othello, is still available on records with a cast that included Uta Hagen, Edith King, and José Ferrer.

That these albums can be object lessons in style may be seen from Olivier's handling of Shakespearean verse. The tendency today in playing the Bard is to undercut and generally understate the lines. There is little of the full-blown rhetoric and overacting, characteristic, so we are told, of older methods. However, no one style fits all moods of Shakespeare, and one of the reasons for the pre-eminence of Olivier is that he can combine both styles.

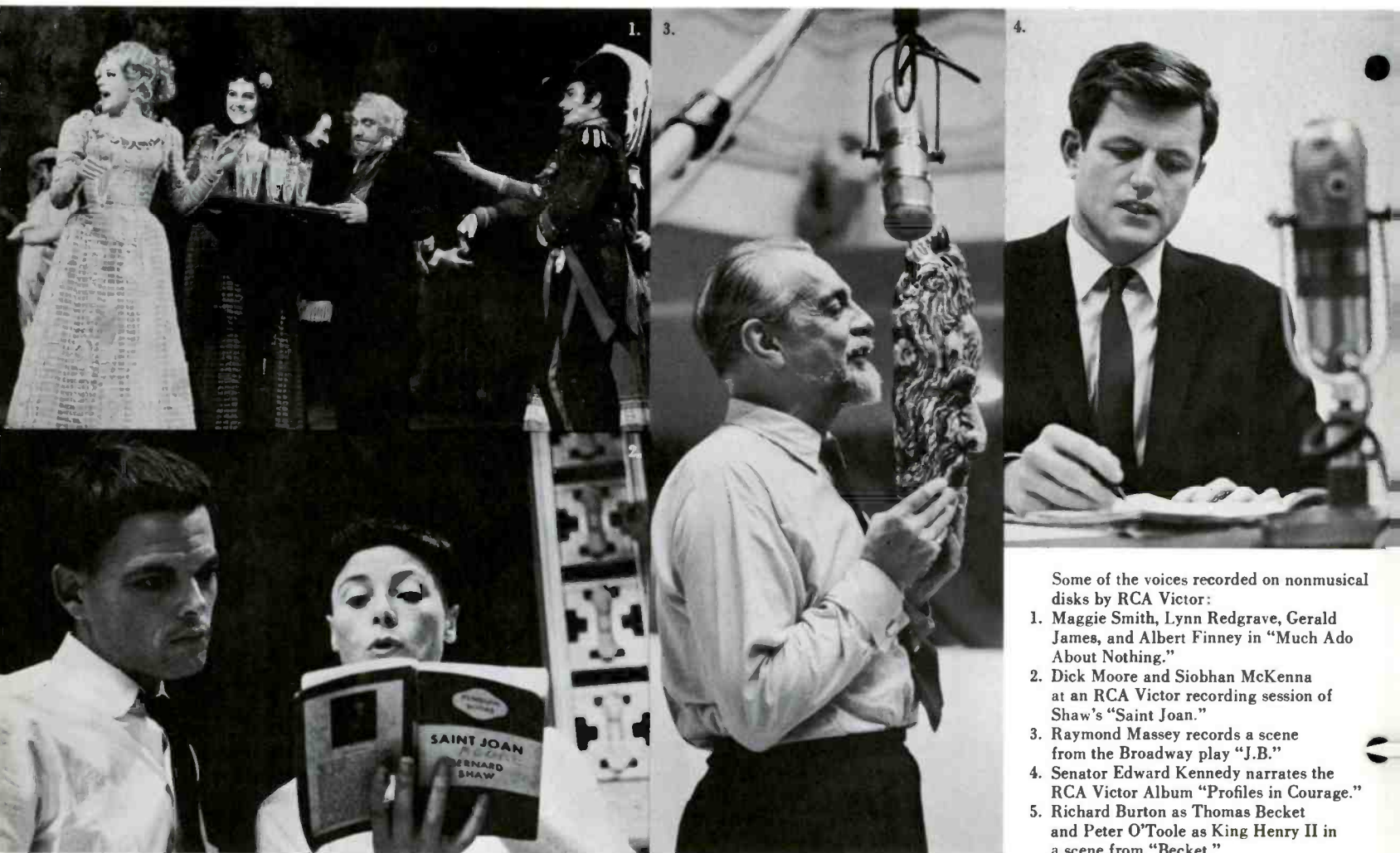
A good example of this is to be found in the opening speech from his "Richard III." Without ranting, Olivier mounts a tirade that shakes the stylus in the groove. But, just as suddenly, he modulates the voice to a conversational level — all with the most expressive results. Only

on recordings can one savor this quality again and again.

There is more than Shakespeare to the drama: Siobhan McKenna's "Saint Joan," praised on two continents, is on records. So is Jason Robard's O'Neill, equally praised. Judith Anderson's "Medea," remembered by all who saw it, has been recently put on vinylite. There is, too, a most moving "Uncle Vanya" with Olivier, Redgrave, and Rosemary Harris that can serve as a model of the way Chekhov is done today in England.

Just as every poet sooner or later gets on disks, so do the comedians and funny men. Their prevalence indicates that albums must be another source of revenue for them. There is scarcely a funny bone that cannot be tickled by someone on a phonograph: the folksiness of Charley Weaver, the jumpy, neurotic exercises of Shelley Berman, the sophisticated humor of "The Committee," the witty and clever work of Flanders and Swann.

Like full-length operas and baroque music, the spoken word dates its beginnings from the combination of tape and the long-play disk. To be sure, there were earlier efforts. The Library of Congress had done a great deal with poets on 78s, and this writer remembers the patter of Harry Lauder way back in the 1920s, but drama, stories, and documentaries did not lend themselves to four-minute takes. Tape made it easy to capture the voices; LP made it economically feasible to reproduce them. It needed a spark



Some of the voices recorded on nonmusical disks by RCA Victor:

1. Maggie Smith, Lynn Redgrave, Gerald James, and Albert Finney in "Much Ado About Nothing."
2. Dick Moore and Siobhan McKenna at an RCA Victor recording session of Shaw's "Saint Joan."
3. Raymond Massey records a scene from the Broadway play "J.B."
4. Senator Edward Kennedy narrates the RCA Victor Album "Profiles in Courage."
5. Richard Burton as Thomas Becket and Peter O'Toole as King Henry II in a scene from "Becket."

to set off the business, and Dylan Thomas provided it.

The first Dylan Thomas recording was issued in 1952; eight others followed. Aided by a personal history that, on this side of the Atlantic at least, kept interest in the poet at a boil, his recordings achieved enormous popularity. In the first six years, more than 200,000 of his records were sold. His sponsors were two young ladies, Marianne Mantell and Barbara Holdridge, who knew as much about the recording business as they did about drilling for oil off the shore of Texas. By now, everyone knows their story: of their cubicle-like beginnings, with cartons of records resting on the sidewalk, moved indoors through the kindness of passers-by, who hated to see the ladies wrestle with those heavy loads. But the ladies were shrewd enough to know that in addition to a good property, they had a good idea. Restricting themselves almost exclusively to the spoken word, they have become one of the most respected firms in the trade.

The success of Caedmon, and other companies like it — Spoken Arts, Folkways, Spoken Word — points up one of the paradoxes of the industry. For, until recently, the spoken word has been the province of the small company. True, the large concerns have a well-merited position in the field and an honorable history in it. RCA Victor's "J. B.," for example, the play by Archibald MacLeish, probably gave the first true illustration of what could be

done with stereo, and that play has still not been superseded in the effective and telling use of the device. Long before LP, RCA Victor was offering the voices of Theodore Roosevelt and Franklin D. Roosevelt, Edna St. Vincent Millay reading from her own work, and Cornelia Otis Skinner and Raymond Massey reading from the works of others. A company that in the past could list a "Hamlet" with Gielgud, a "Romeo and Juliet" with Claire Bloom, and a "Richard III" with Olivier need not be defensive about what it has done in this area.

Another of the recording giants, Columbia, is responsible for a literary series by 12 distinguished prose writers, as well as a number of excellent documentaries, including the famous "I Can Hear It Now" group. These are only two companies among others.

Their hesitancy was largely economic. The overhead of a large company is constant. The cost for a single disk (manufacture, sleeve, artwork, etc.) is the same whether the artist is one man reading or the Boston Symphony Orchestra with a top-name conductor. In the matter of fees, an actor or even a poet who will work for less money for a small company will set his financial sights higher when dealing with what he considers a multimillion-dollar corporation. Then again, even if there is a profit, the return may not warrant an investment by a big firm. "We are not in the business," said one spokesman, "of breaking even." General Motors doesn't manufacture bicycles even though they can be sold at a profit.

It should be said that the situation appears to be changing. For a while now, Columbia has been aggressively recording Broadway and off-Broadway plays, not all of them hits, either. Last year, RCA Victor recorded, in England, the highly acclaimed National Theatre of Great Britain production of "Othello," starring Laurence Olivier and Maggie Smith, under simulated stage conditions. In June, RCA Victor once again collaborated with that eminent British theatrical organization for a recording of Shakespeare's "Much Ado About Nothing." This much-praised Franco Zeffirelli production stars such luminaries as Maggie Smith and Albert Finney. The recording will be issued in the fall.

Figures in the industry are hard to come by and are not always reliable. But some are useful for purposes of comparison. To record a complete opera can cost \$60,000, a symphony between \$16,000 and \$20,000. To start making money, a symphonic recording must sell at least 37,000 copies. Even a chamber-music work will have to sell 10,000 copies. In contrast, the break-even point for a nonmusical offering — for a small company — will be between 1,000 and 3,000 copies. One man admitted that he could break even by selling 400 copies, although this is undoubtedly a special case.

Manufacturers of spoken-word disks have at least two things going for them. Unlike the field of music, where the latest recording is the one sought after, poetry, plays, even humor do not easily become obsolete. Frost, Eliot, de la Mare will, if anything, be in greater demand. And in a world where most of our esthetic pleasures are visual — cinema, television, photography, printed matter — the spoken word sharpens the ear. More and more people are learning that cultivating the sense of hearing can add an enriching element to their lives. ■



The area code for Greenland is 859; for Belgium, 846; for Switzerland, 845. And you can dial the last two direct. A one-minute call to Brussels from Kankakee or San Francisco or Miami or any other American city costs \$3, and both parties automatically and immediately have a written record of the transaction.

Some new kind of telephone magic? Not at all. For one thing, such a call has nothing to do with the telephone. For another, it's certainly not magic; it's telex (teleprinter exchange), one of several international communications services provided by RCA Communications, Inc. Telex provides subscribers with private two-way telegraphic communications to correspondents overseas.

This is how it works: the customer — a manufacturer in, say, San Francisco — wishes to inform one of his salesmen in Brussels about details in filling an order. Using telex, he simply dictates a message to his secretary; she, in turn, dials area code 846, followed by the telex number of the firm's Brussels office, and types the message on the teleprinter in San Francisco. As she types, the words are printed simultaneously by an identical teleprinter in Brussels. The party at the Belgian end of the circuit can, of course, reply instantaneously and make the transaction a genuine two-way conversation. In effect, the two parties are conversing in typed words; their messages may be transmitted by high-frequency radio, coaxial cable, or communications satellite.

The advantages of such a service are manifest. It assures fast, convenient, two-way overseas communication in writing. It gives the subscriber an accurate printed record of what transpired. In addition, it allows subscribers to transmit messages when the recipient is absent, for messages can be printed by the receiving teleprinter even when the equipment is unattended.

Telex was introduced intercontinentally in 1950, and in a number of ways it typifies much that has been happening in the field of international communications. Telex was made possible by fairly recent technological developments; it has undergone continuing improvement as a result of newer discoveries and a rapidly advancing technology; its use and the jobs it has been called upon to perform have been, and are, growing prodigiously. The same is true of the entire international communications industry. To appreciate the staggeringly large numbers of messages that are exchanged internationally, it is necessary to keep in mind the fact that RCA Communications, Inc., while the leader in traffic volume, is only one of five U.S. international telegraph carriers.

As recently as 20 years ago, international communication was of necessity conducted essentially on what might be termed a "Morse basis." There were but two types of international record communications available to the businessman: cablegram and radiogram. That was all the technology of the day could provide. Then, in 1948, RCA Communications engineers and their counterparts from The Netherlands Postal and Telecommunications Administration developed the automatic signal clearing equipment known as ARQ. (ARQ in communicators' jargon means "automatic request." The full name for ARQ is "automatic error reduction and correction equipment.") This new equipment greatly improved the accuracy of transmissions

Dial 859 for Greenland

International telex connects continents
for space-age communications.

by Edward W. Atkinson



by automatically rejecting distorted signals and requesting their retransmission until a perfect signal was received. ARQ-protected channels made possible the introduction of customer-to-customer services such as telex and leased channels.

Leased-channel service was pioneered in 1948 by RCA when it leased a circuit to Pan American World Airways to connect the airline's New York and Frankfurt offices. For the first time, it placed at the private disposal of a subscriber the exclusive use of a two-way international teleprinter channel, allowing simultaneous transmission in both directions. This was a historic development in international communications.

Today, two-way teleprinter and alternate voice/data channels can operate at various speeds from 17 to 3,000 words per minute, and they are custom-engineered to meet

the customer's specific needs. For instance, some stock brokerage firms with offices abroad utilize their private channels to interrogate computers in New York about up-to-the-minute market information as well as to send and receive normal telegraph traffic. In 1964, the service was extended to Hawaii; and the Associated Press now uses it daily to transmit to the islands the complete listings and closing prices on the New York Stock Exchange, a process that requires only 10 minutes. Leased-channel facilities are also available for the transmission of facsimile material.

The introduction of telex by RCA Communications in 1950 added another powerful and much-needed weapon to the international communications arsenal.

These new customer-to-customer services marked the start of a new era in international communications. They



doubled the number of overseas communications services available to American business. They gave the customer direct control over the processing of his messages, and they brought to telegraphic communication the one outstanding advantage of the telephone: an immediate, two-way exchange of information.

The skyrocketing growth of international communications and the need for additional means to conduct this overseas traffic are clearly demonstrated by the dramatic increases in the use of these new services. In 1948, when RCA introduced leased-channel service, there was a single channel in use between the United States and West Germany. Today, the U.S. international communications industry provides approximately 400 such channels, and RCA Communications alone leases more than 240 private communications channels to government agencies and business

concerns. (These leased channels include the radio Hot Line that links the White House and the Kremlin, and the Washington-Moscow weather line over which U.S. and Soviet meteorologists exchange weather information.) The number of international telex calls placed through RCA Communications rose from 1,500 in 1950 to 105,000 in 1955, to more than 1 million in 1964; and RCA now provides telex service to and from 105 overseas points. The total number of international telex calls placed through all U.S. carriers in 1964 was approximately 2 million, and forecasts place the figure at 6 million by 1970.

These figures, imposing as they are, represent only the beginning. International telex and leased-channel services both have been expanding at an annual rate in excess of 20 per cent since the early 1950s.

The advent of the new customer-to-customer services has in no way diminished the demands made upon the older means of international communications. Quite the contrary; as utilization of the newer services has steadily risen, there has been a concomitant increase in the number of message telegrams handled by RCA Communications. In 1920, RCA handled 300,000 radiograms. In 1960, RCA Communications handled 8.5 million overseas telegrams; and by 1964, 10.8 million overseas telegrams containing 292 million words. Also by 1964, the number of overseas telegrams processed by the entire U.S. international communications industry had grown to more than 24 million. And communications experts predict that by the year 1970 the industry traffic load will be approximately 28 million overseas telegrams annually.

The growth of electronic data processing is one of the principal factors that has brought about a demand for new systems of international communication capable of greater speed, flexibility, and capacity.

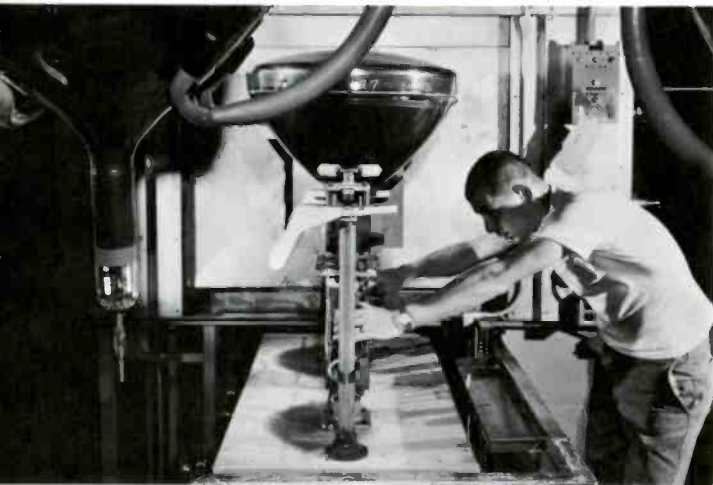
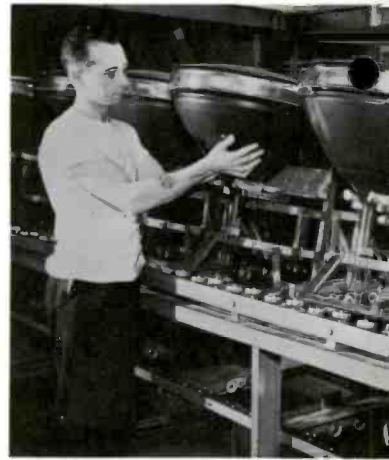
To help meet this need, RCA introduced datatelex service between the United States and the United Kingdom late in 1962. This new service permits subscribers to transmit data overseas in any form — magnetic tape, punched cards, or paper tape — at speeds of 1,200 bits per second, the equivalent of 1,500 words a minute.

The general growth and the continuing day-by-day conduct of international trade and commerce are attributable in large measure to the advances made in international communications. Global marketing requires global communications. Such international commercial enterprises as banks, stock and commodity brokerage houses, chemical firms, automobile manufacturers, and airlines depend for their very existence upon the availability of rapid, effective, low-cost communications. The continuance of their economic growth and stability will demand even greater communications capacity and efficiency in the future.

Can the communications industry meet these demands? Has the state of the communications art kept pace with the technology in other fields? The answer is an unqualified "yes," according to Howard R. Hawkins, Executive Vice President of RCA Communications, Inc. "Never," he says, "has international communications been so important, so far reaching, so indispensable; never have the demands upon it been so great. But never has it held such promise, and never has the technology to satisfy these demands been so extensive or so capable." ■

The Burgeoning Color Television Industry

The American consumer has already proved beyond a doubt that 1965 is the year of color television, and sales of color sets continue to climb to new high levels. Demand for color sets and tubes has outstripped supply, and color TV has become the fastest growing industry in the world. Among the factors contributing to this growth are greatly increased local and network color programming, reductions in color set prices, and advances in color cameras and receivers that result in even better, sharper pictures on home screens.



This year, sales of color TV sets, for the first time, will exceed the sales of black-and-white sets. Total retail dollar volume of color set sales is expected to be \$1.2 billion this year, and approximately 25 per cent of all sets sold in 1965 will be color sets. As of April 1, 1965, there were 3.2 million color TV sets in use in the United States; the figure is expected to grow to 5 million by the end of the year.

The tremendous upsurge in demand has strained the industry's color set production capacity. The Radio Corporation of America is a principal manufacturer of color sets and color picture tubes. Its efforts to meet the rocketing demand





for both tubes and sets epitomize the growth and change that mark the color TV industry today. In mid-June, RCA announced the largest single expansion program in its history — an outlay of \$50 million to increase production facilities for color TV receivers and picture tubes.

The expansion program will more than double RCA's color TV set production capacity within two years and will double its color tube output within three years.

The photographs on these pages show various stages in the manufacture of color TV tubes at the RCA plant in



Marion, Ind., and color TV set assembly at the company's Bloomington, Ind., plant. These facilities, plus other picture tube and component production lines at Lancaster, Pa., and Indianapolis, Ind., are to be expanded by the record capital outlay. The new diversity of color tube shapes and sizes is also evident in these production pictures. RCA currently produces 25-inch and 19-inch rectangular color tubes and the round 21-inch tube now in standard use, and may begin to market color tubes of smaller size in the future.



The Social Impact of Television

The ability of TV to provide news, entertainment, culture, and education to mass audiences has brought about significant changes in our way of life.

by Desmond Smith

No other single phenomenon in American life has ever met with such acclaim as television. It took 80 years for the telephone to be installed in 34 million homes. It took 62 years for electric wiring, 49 years for the automobile, and 47 years for the electric washer to reach the same number of homes. Television made the giant stride in 10 years.

"People who deny themselves television deny themselves participation in life today," says author and critic John Mason Brown. "They are self-exiled from the world." Actually, with nine out of 10 U.S. homes television-equipped, little is heard of the old argument: TV is a time-killing pastime for passive viewers.

The uncanny ability of video to involve the viewer deeply is well known. For example: KQED, a San Francisco educational TV station ran a half-hour program about Japanese brush painting. Since it was a "how to" program, a young woman producer bought 300 painting kits in anticipation of a moderate viewer response. The station eventually sold a staggering total of 14,000 sets at \$3 each. And when the H. J. Heinz Company offered a salad recipe book on a single daytime commercial, more than 112,000 viewers wrote in for a copy. When Leonard Bernstein reported the reception the New York Philharmonic-Symphony received on one of its recent tours, he said there was "an explanation other than musicianship to explain the extraordinary enthusiasm" of the audience. "You can't imagine," he said, "how we have been gathered in by audiences that obviously knew about us through television." There were places where the audiences stood and cheered for minutes before the orchestra even played a note.

The cultural fallout from television has been astounding. Critics may, of course, debate the level of musical discrimination shown by an audience that applauds on sight.

Yet, the significant thing here is television's incredible ability to increase the awareness of a vast public. The opening of the Lincoln Center for the Performing Arts, three years ago, is a case in point. Some 25.6 million television viewers saw and heard some part of the two-hour concert; in contrast, 2,600 attended the concert that night in Philharmonic Hall. Television attracts the biggest and most heterogeneous audiences in the history of communications. It can attract 60 million people to a program like "Bonanza," and it can interest another 16 million in Leonard Bernstein's "Young People's Concert." Consider the social impact of a program such as Lou Hazam's NBC production, "The Louvre," which drew 15 million viewers when first shown in November, 1964. Last June, it was run again before an estimated audience of 15 million people. That is a total of 30 million Americans — more Americans than have visited the Louvre in Paris since George Washington was President.

To be sure, television is mass entertainment for millions. On the other hand, millions who view action adventure on television have also had access to such experiences as the NBC Opera Company's color production "The Love of Three Kings," a three-hour report-in-depth on civil rights, and a re-enactment of the French Revolution. Television, to a far greater extent than motion pictures or radio before it, stimulates curiosity in people who normally do only a minimal amount of reading. The chairman of the American Library Association's broadcasting committee has said: "Dramatization of classics on TV inspires people to read or re-read the classics. And public affairs documentaries have been sending people back to history books. . . . We look upon television as a tremendous motivational force. And we haven't even scratched the surface." A monthly bulletin of the New York Board of Education published the

In the course of a single broadcast day, TV is many things to the average family...



...a baby sitter for preschool children...



...a visual news disseminator...



...a cordon bleu cooking course...



...a friendly visitor to shut-ins...



...an afternoon at the movies...



...a free ticket to sports events...



...a concert hall...



...an evening of relaxation.

GAIL ROSE



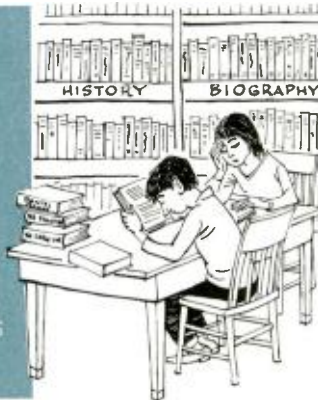
In politics, one TV appearance for a candidate is equivalent to hundreds of street corner rallies.



In education, TV is relieving the teacher shortage. One teacher can enter a thousand classrooms.



For literature, TV is stimulating an enormous interest in reading.



Via satellite, TV is bringing great worldwide events into the home at the time they happen.



results of a survey of 73 library systems across the country and concluded, "Television encourages more reading . . . any story which appears on television creates a demand for the book." Shortly after "Davy Crockett" appeared on the nation's television screens, Frances Lander Spain, Coordinator of Children's Services at the New York Public Library, said: "The program's effect on children was immediate. . . . Biographies of Davy Crockett, Kit Carson, Jim Bridger, James Bowie, the Mountain Men, and even 'Eastern' pioneers like Daniel Boone; folk tales of Pecos Bill and Paul Bunyan; histories of the Old West; pioneer yarns and covered-wagon stories — all our books on every subject even remotely connected with Davy Crockett were called for and borrowed until our library shelves were bare."

A couple of decades ago, the average family learned about political issues and candidates from three main sources — the newspaper, radio, and the street corner rally. Most Americans have long since switched their allegiance to television; there are now 53.1 million TV homes in the United States, versus fewer than 5 million in 1945. Television has become the single biggest expense item in any major political campaign. Also, as Vice President Humphrey observed on NBC's "Sunday" program, a candidate, nowadays, can accidentally be exposed to more viewers on TV than he could ever have calculated by means of earlier campaigning methods.

"I wouldn't have won the election without the debates. The first debate actually changed votes. The others simply reinforced convictions that were already forming. Only the first really changed votes. And, of course, that is what I needed. They underrated me before the first debate." Thus spoke John F. Kennedy after winning the Presidency by a narrow margin of 112,000 votes. By the spring of 1964, it was clear that still another factor had become part of television's social impact — the use of selected returns to project the results of primary, state, and national contests. The Network Election Service, which pooled the resources of three networks and two press associations, employed no fewer than 150,000 people to gather data during the last Presidential election.

Not long ago, in a survey conducted by Elmo Roper and Associates, 58 per cent of those sampled answered "television" to the question: "Where do you get most of your news about what's going on in the world today?" But, as Robert E. Kintner, NBC's President, observed in *Harper's*

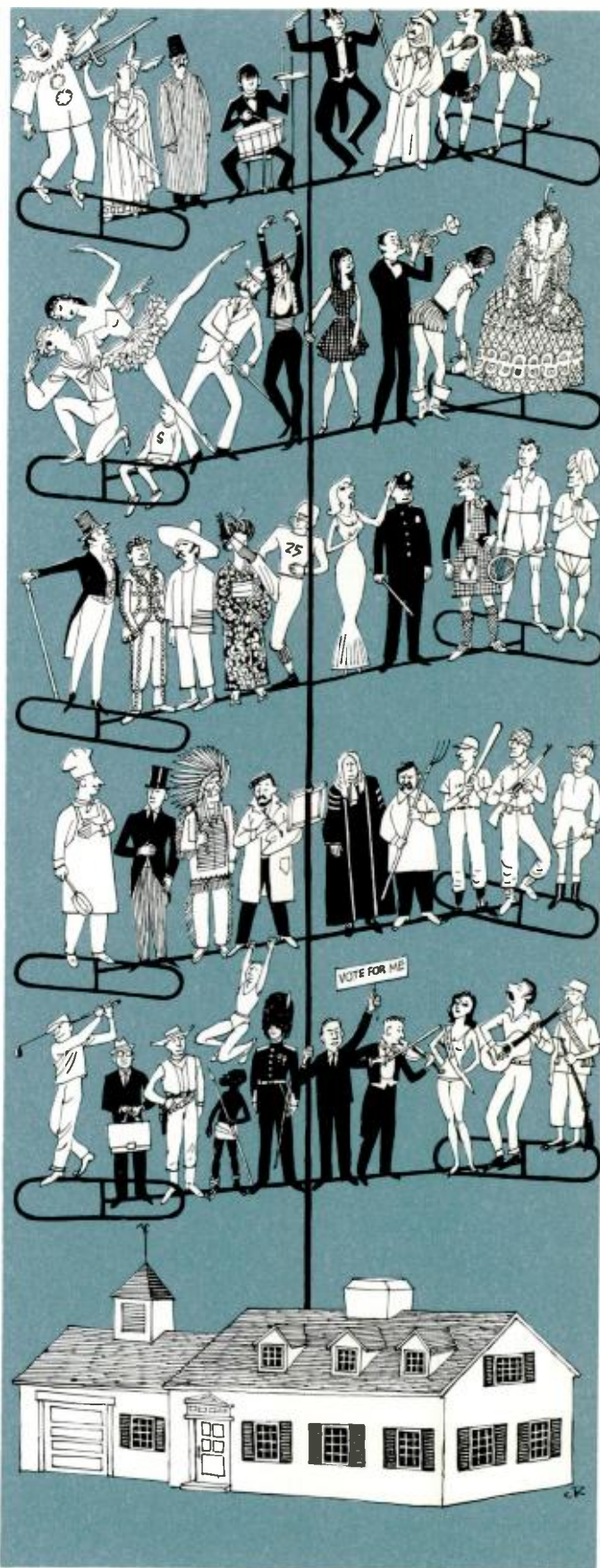
magazine: "Competition between newspapers and broadcasters no longer exists in a true sense. The day of the 'Extra!' is gone — a broadcaster can put the same news on the air, in starker detail, hours faster than a newspaper can set a banner headline and a one-paragraph bulletin, print the paper, and get out on the newsstands."

Television news gathering is, of course, a tremendous business; the three networks last year spent more than \$125 million to present the news. As a result, politicians who once held important announcements for a public speech or a press conference now go on TV instead. Consider, for example, NBC's "Meet the Press." It was on this program that Adlai Stevenson gained the national prominence that resulted in his first Presidential nomination. It was also on "Meet the Press" that Thomas E. Dewey, then titular head of the Republican Party, first revealed that General Dwight D. Eisenhower was his candidate for the Presidency.

Elsewhere, educators have recognized that television is a versatile instrument for grappling with the nationwide teacher shortage. This has certainly left its social impact on the little red schoolhouse. Consider the job Mrs. Ruth Abbott holds. About 1,500 Oklahoma third-grade school children view her televised art course. After Mrs. Abbott's 15-minute lesson on paper sculpture, children in 170 classrooms throughout the state go to work. Before art lessons were televised, most art instruction in the state lacked the expertise and experience that come only from teachers like Ruth Abbott. Oklahoma City, for example, had only three art teachers to cover 80 elementary schools.

Today, educational television — ETV for short — has more than 100 TV stations, employs thousands of people, and reaches millions of men, women, and children every day. With more than 50 million youngsters and adults — one-fourth of the nation — engaged in some program of formal education, the over-all view often appears to be a huge, blurred scramble. Yet, television takes on enormous importance when it is realized that more than 25,000 of the 125,000 public schools in the United States are still one-teacher schools. Reaching into the most isolated school, ETV can ensure that thousands of students are not deprived of essential subjects.

But television's biggest impact has been on the American home. Before TV, it looked as though Detroit might turn the suburban home into an appendage tacked onto the two-car garage; a nice place to sleep but you wouldn't want



to stay there. Television changed all that. This winter, Americans will spend more time watching TV in their living room than doing anything else except sleeping. In contrast to many other forms of entertainment, television brings the entertainment into the home. The astonishing thing about TV in the home is its boundless variety. In the course of a single broadcast day, TV is many things to the average family — a visual newspaper to glance at over breakfast; a baby sitter for preschool children; a *cordon bleu* cooking course; a friendly visitor for shut-ins, retired people, and harassed housewives; a free ticket to the ball game for sports fans; an afternoon at the movies for the kids; a source of after-dinner relaxation for father; an education in current history for the family; and so on. Last year, the audience research company, A. C. Nielsen, estimated that the average viewer spent about 5.3 hours every day watching television. Also, mostly on account of its living-room setting, TV has encouraged the growth of a vast amount of new goods and services. The list runs from such wild and wacky items as monogrammed TV pants and non-crunchy TV candy to frozen TV dinners. Nowadays, social habits within the home tend to be dominated by the all-embracing television habit. One female TV viewer actually wrote the former head of the Federal Communications Commission: "Dear Mr. Minow: I do believe programs on television are a bit better. Now, what can be done to improve TV dinners?"

If you dislike the increased amount of time spent in your household watching TV, your attitude is far from new. Back in the early days of television, Fred Allen quipped, "The next generation will be born with four eyes and no tongue." But, over the past decade, such protests have diminished. Television began to change from an occasion when lights were turned down, neighbors were called in, and children were silenced. Watching TV has become a part of modern living, defined much like sleeping and eating, going to school, or working. Moreover, 21 per cent of all TV homes are now multiset households. Thus, television is a normal part of everyday family life, with individual members free to watch their own programs as they wish. In *Living with Television*, a study by sociologists Ira Glick and Sydney J. Levy, one respondent summed up what TV meant to his family:

"There are three of us in the family, my wife and I, and Nancy who's six. She's in kindergarten. In my spare

time I like to play golf and cards, work in the yard on the lawn; I like to go to sporting events, have house parties, visit with the neighbors. I spend a lot of time on my duties for the Knights of Columbus. And we watch television regularly. Nancy watches it early in the morning and in the early evening. My wife watches soap operas at noontime and at night. We watch more in winter than in summer. We watch every day, between five and six hours a day."

Now, examine what television has done for America's 2,320,000 farm families. Before TV, a rural family was dependent upon radio, the local newspaper, or a periodical such as *Capper's Weekly* or *Wallace's Farmer*, for its news and relaxation. On many an Iowa farm, the big day of the year was when the mailman delivered the Sears-Roebuck catalog. Today, 89.7 per cent of all farms have television and, according to the audience surveys, watch TV just as avidly as city folk. As Marshall McLuhan noted in his book *Understanding Media*: "It is [television's] implosive factor that alters the position of the Negro, the teenager, and some other groups. They can no longer be contained, in the political sense of limited association. They are now involved in our lives, as we in theirs, thanks to the electric media."

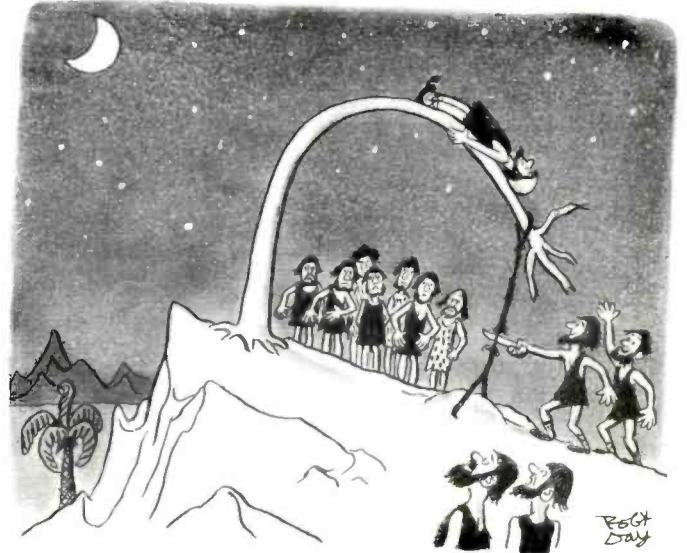
A relatively new development is satellite TV, which now makes possible the prospect of worldwide television broadcasting. In 1938, there were only a few thousand television sets in the entire world; last year, there were more than 161.5 million television sets in use and more than 5,300 television stations. A giant step toward world television broadcasting was the launching, in May, of Early Bird. The ability of Early Bird to flash instantaneously a picture over six continents has created a fantastic array of possibilities. Heart surgery televised from Houston has been observed by doctors in Switzerland. Pope Paul VI has spoken to millions of television viewers on two continents. President Johnson's use of Early Bird to address simultaneously audiences in Europe and the United States suggests that satellite TV may offer a new forum for better international understanding.

RCA's Board Chairman David Sarnoff predicts that before the century ends "satellite television will transmit on a worldwide basis directly to the home, and a billion people may be watching the same program with automatic language translation for instant comprehension." All of which suggests that television will continue to engender immense social impact for some time to come. ■

THIS
ELECTRONIC
AGE...



"He's at his ranch, and if you think I'm taking you all the way to Texas you're greatly mistaken."

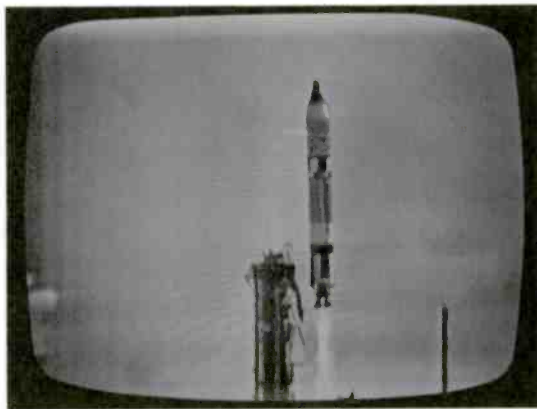


"My point is, shouldn't we solve all the problems on our own planet first?"



"Get him away from that computer and he's nothing."

Gemini 4 is launched from Cape Kennedy. NBC televised the liftoff in color, a "first" in broadcast journalism. Photo below shows film, still, and TV cameras focusing on the historic event.



Television



Coverage of Gemini 4

by Stanley Appenzeller

How NBC-TV telecast the history-making flight of astronauts McDivitt and White.

On a warm morning in early April, just two weeks after the launching of Gemini 3, America's first two-man space flight, NBC News producers Chet Hagan and Jim Kitchell were standing under the Florida sun at Cape Kennedy. Though the country's next space mission was still two months away, their preparations for that event were already under way as they surveyed NBC's television facilities at the press site — a cleared sandy area amid scrub bush where parked vans that served as television studios, control rooms, and offices for the three television networks gave the area a trailer-camp appearance.

"We didn't expect any major problems at the Cape," Hagan recalled later. "Our trailers and some of the equipment that wasn't needed elsewhere were still in place after the coverage of Gemini 3. In fact, that flight served as a dress rehearsal for the upcoming Gemini 4 flight."

But there were several new problems that would have to be solved before the June 3 mission of Majors James A. McDivitt and Edward H. White, II.

FIRST COLOR TELECAST OF SPACE LAUNCH

Immediately after the March 26 launching of Gemini 3, the decision was made to telecast the next space launch in color. And, for the first time during the Gemini 4 flight, a manned mission would be controlled from the new \$100-million Mission Control Center at NASA's huge Manned Spacecraft Center in Houston, Tex.

"The decision to colorcast the launching was a natural one for NBC," explained Hagan. "We are the leading color network and the pioneers in color television. Color coverage of the Gemini 4 launch was a logical next step since it was an important news story and it lent itself well to color coverage. In fact, seeing a rocket launching in color gave millions of viewers a picture of a dramatic spectacle that they would otherwise never have seen. The sight of a huge rocket lifting off is something that never fails to excite you no matter how often you see it."

What finally made such coverage possible was the availability of a separate line for NBC-TV's exclusive use between Cape Kennedy and New York. During past space coverage, the three television networks had to share the available lines. Since the other two networks were not

interested in color, these shared lines were limited to black-and-white transmissions.

The importance of the shift from the Cape Kennedy Mission Control Center to the one in Houston, as far as television coverage was concerned, was that it meant new facilities had to be constructed at the Manned Spacecraft Center, where none existed before. All the announcements about the progress of the mission would be made there by Paul Haney, the principal Gemini spokesman for the National Aeronautics and Space Administration. The voices of the astronauts in space would also be fed to the networks from the Houston center.

Finally, the length of the flight — four days — made necessary unprecedented techniques for bringing viewers continuing and up-to-the-minute television coverage. Never before had there been an American space flight of this length.

PLANNING TV COVERAGE

In planning for this comprehensive coverage of Gemini 4, Hagan, who was over-all producer in New York, and Kitchell, who was producer at Cape Kennedy during the launch and later in Houston, had the benefit of many years' experience in reporting space developments for NBC News.

Hagan, an NBC News producer since 1958, has put together more than 450 "specials," most of them of the "instant" variety produced on a few hours' notice to report fast-breaking news stories. These programs have ranged from a 15-minute show about nuclear testing to the 11½-hour coverage of Lt. Col. John H. Glenn's orbital flight.

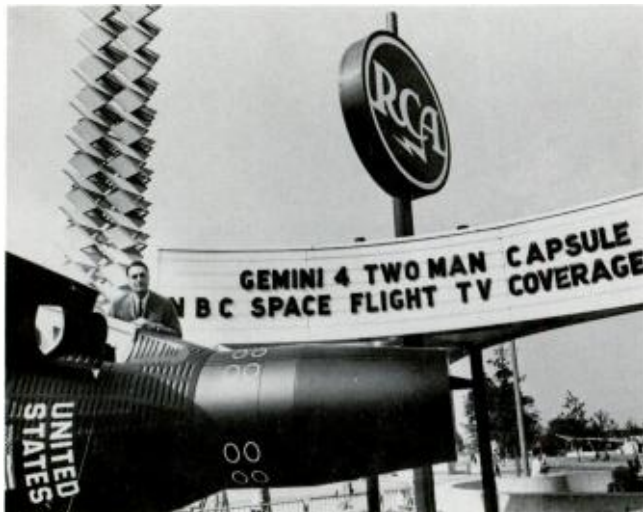
Kitchell has worked as a producer or director on every major space event that NBC News has covered, starting in 1957, when, says Kitchell, "half the job of covering a launching was trying to find out when a launch was scheduled and what was going up."

Following the tour of Cape Kennedy in April, Hagan then flew to Houston to plan the coverage. There, Hagan and Jerry Jacobs (who was to produce the Houston coverage until illness forced him to return to New York a week before the launching) met with NASA officials to determine where they would be permitted to set up television facilities. When they learned that the networks' anchormen were not allowed to telecast from the center because of the lack of facilities, Hagan and Jacobs surveyed other locations and decided to build a unique "penthouse" studio atop a seven-story motel overlooking the Manned Spacecraft Center.

When Hagan returned to New York, he planned for other remote pickups and programming features that would

make NBC News' television coverage of the Gemini 4 flight meaningful to the average viewer.

"In reporting a space flight," explained Hagan, "we are faced with the problem of explaining a very technical story to laymen in terms they will understand. This is the one thing we always keep in mind. A manned space flight is an extremely complex event with its own special language. There are also many highly technical experiments being tried throughout a flight. Therefore, we must plan features that will explain the mission in clearly understood terms so the viewers will know what is being done at all times and also the significance of what is happening in space."



NBC News' Peter Hackes with full-scale replica of the Gemini 4 spacecraft at the RCA Pavilion, New York World's Fair.

One of the ways this was done during the Gemini 4 flight was through the use of a full-scale replica of the Gemini spacecraft, accurate to the smallest detail, that was especially constructed for NBC News. This mockup capsule was located at the RCA Pavilion at the New York World's Fair to explain how the complicated spacecraft maneuvers in space.

Another remote location used by NBC News during its television coverage of the launch was the World Weather Center of the United States Weather Bureau in Suitland, Md. Here, weather reports come in from all over the world, and weather pictures taken from satellites are also processed. In reports from this center, viewers learn of some ways that weather is predicted for the launch site and recovery areas. Such predictions become important considerations before any manned space flight can be attempted.

ASSIGNMENT OF NBC NEWS PERSONNEL

The next step in preparing for the coverage of Gemini 4 was the assignment of the NBC News correspondents. Because of the importance of the event, the number of locations to be covered, and the length of the mission, three of NBC's top news correspondents were named as anchor-men for the coverage.

Chet Huntley and David Brinkley were assigned to Houston, and Frank McGee reported from Cape Kennedy on the day of the launch, after which he returned to New York for the rest of the mission.

In addition, correspondent Merrill Mueller, like McGee a veteran reporter of space events, broadcast from Cape Kennedy during the launch and remained there throughout the flight; Washington correspondent Ray Scherer, aerospace correspondent Roy Neal, and Ray Miller of NBC-TV affiliate KPRC-TV in Houston, were at the Manned Spacecraft Center; Pentagon correspondent Peter Hackes was stationed at the World's Fair to explain the operation of the Gemini model; and Dr. Frank Field, a meteorologist, reported from the Suitland weather center.

Also participating in the coverage were NBC News correspondent Aline Saarinen, who was at the McDivitt home, and Lee Tucker of KPRC-TV, who reported from the White home. Both families live in Houston.

With the knowledge acquired from the surveys of what facilities, equipment, and manpower would be needed at the various locations, timetables were made up in New York listing the days before launching that personnel would be required at Cape Kennedy and Houston as well as at the other locations. These dates were established so that someone would be on hand to supervise any necessary construction, technical crews would be able to prepare the facilities for the equipment, and other engineering personnel would arrive at the proper time to install the cameras and other equipment. The correspondents and editorial staff, who could do much of their work in their own offices, would be among the last to arrive at either Houston or Cape Kennedy.

"In some cases," recalled Hagan, "we just made our deadlines. For instance, the color mobile unit we assigned to the World's Fair had to come from Ligonier, Pa., more than 300 miles away, where it was used for an NBC-TV colorcast of a National Golf Day tournament on May 31, just three days before the Gemini 4 launch."

The first man from New York to arrive at Cape Kennedy to begin the actual preparation for Gemini 4 was Edward Faught, NBC News unit manager. He arrived at the Cape at "T-minus-23," or 23 days before the June 3 launch date. Faught was also the last man to leave the Cape.

Joining him at the Cape was Dick Horan, technical supervisor for NBC-TV affiliate WFGA-TV in Jacksonville, Fla. The station's mobile unit and trailers are used for the television coverage at the Cape, and the station's engineers augment those of the network.

Among Faught's early duties were the booking of motel rooms for the nearly 100 NBC people who would eventually be working at the Cape and the hiring of cars to take personnel from the Cocoa Beach motels to the Cape.

PREPARATIONS AT CAPE KENNEDY

For the first time, NBC News rented office space in a new Cocoa Beach office building, where Kitchell worked when not at the Cape and which also served as the office for NBC radio coverage of the flight. During past flights, NBC News' offices were set up in various motel rooms. With its own office and switchboard, calls received at the office center could be transferred to the trailers at the press site when the people were working at the Cape. The same office will be manned between future flights by NBC News correspondent Jay Barbree, who lives at Cocoa Beach.

Another innovation for the Gemini 4 flight coverage was a radio-telephone in Kitchell's car. It proved valuable even

before the actual launching, when Kitchell was able to make arrangements for a special telecast reporting on a NASA news conference while driving McGee, who did the program, from the NBC News office to the Cape studios.

As the date of the launch neared, activity increased at the NBC News office at Cocoa Beach and at the "trailer city" complex at the Cape Kennedy press site.

At the latter location, 9,000 feet from Launch Pad 19, where the Gemini flight would blast off, each television network assembled its television trailers. Except for television cameras manned by the Air Force some 1,000 feet closer to the pad, this is the closest to the launch point that unsheltered observers are permitted. Scientists and others directly concerned with the launch operation are permitted closer access, but they work in a concrete blockhouse that provides protection in case of an accident.

For the Gemini 4 flight, NBC television used four large aluminum trailers, a mobile color television unit, and a roving black-and-white television unit. Two of the trailers, placed side by side, were located with their front ends facing Pad 19. Across the top of these two trailers, a wooden platform was built to provide the outdoor studio where McGee anchored the coverage from Cape Kennedy. The platform, though similar to the one used for Gemini 3, had to be strengthened and enlarged to accommodate the color cameras used for Gemini 4. From this studio, cameras showed McGee and, over his shoulder, the Titan rocket poised on the launch pad.

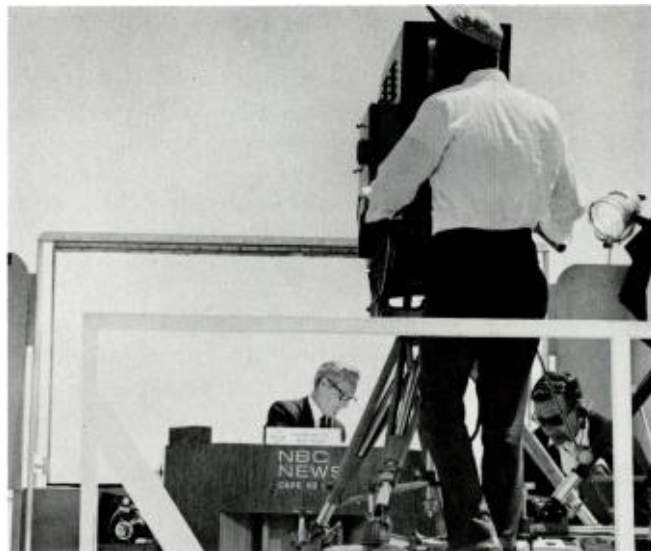
One of the trailers below this platform contained a fully equipped newsroom. The adjacent trailer provided an enclosed, air-conditioned studio with two sets, one at each



NBC News correspondent Frank McGee visits Launch Pad 19 a few days before launching to gather background material.

end of the trailer, with cameras located in the middle. Lined up behind the studio trailer were two more vans — the control and transmission trailers.

The control trailer, as the name implies, is a control room on wheels, where producer Kitchell and a half-dozen other production personnel faced nearly two dozen television monitors. These monitors show the pictures from every NBC camera at Cape Kennedy, the "pool" feed, the



Frank McGee broadcasts from an open-air studio atop a trailer at the Cape Kennedy press site during the Gemini 4 flight.

picture selected from all these by Kitchell for transmission to New York, and the picture that is on the air.

The transmission trailer was the last one in the line and contained not only the electronic transmission equipment but also a television tape recorder and a film chain for televising film.

For the color coverage, a fifth van was squeezed into the NBC space at the press site, alongside the control trailer. The color unit almost didn't make it to the Cape on time, but unit manager Faught came to the rescue. As Faught remembers it, he received a telephone call from the mobile unit and was told its engine had failed in North Carolina while en route to the Cape from New York.

"When I found out it couldn't be repaired immediately," said Faught, "I quickly found out the nearest railroad and began to make arrangements to get the unit down." Placed aboard a flatcar, the unit got as far as Orlando, Fla., which is 65 miles from the Cape. From there, a giant tow truck took it to the press site, but because of its size and slow speed a police escort had to be arranged for the entire route.

To power all of NBC's equipment at the Cape requires enough electricity to supply 100 modern homes. Surprisingly, most of this power is for air conditioning. Because of the close quarters, which hamper ventilation, and the warm Florida climate, temperatures can easily build up to a point where the delicate electronic components and tubes would break down. To cool the trailers, more than 30 tons of air-conditioning capacity is required.

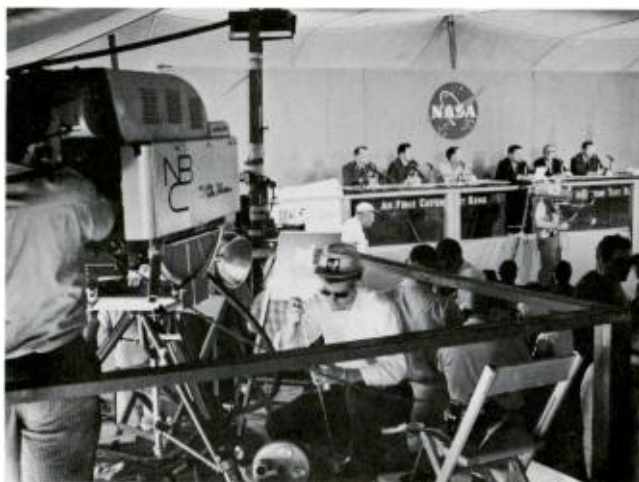
COLOR CAMERAS FOR THE LAUNCH

NBC used four color cameras for its color coverage of the launch. Two were mounted atop the trailer on the platform to cover McGee and, using very high-powered telescopic lenses, to show the Titan missile on the launch pad. Another color camera was located in the studio trailer, where Mueller reported and also where a rear projection screen showed the spacecraft traveling over a map after the launch. The fourth camera was at the press-site news center for coverage of a post-launch NASA news conference.

NBC also had access to a color camera manned by Air Force crews. The Air Force regularly uses color television for a closed-circuit system to monitor rocket launches.

Black-and-white television coverage included several additional cameras on WFGA-TV's mobile unit, and also the "pool" feed mentioned earlier. Each network is a member of this pool and takes turns producing the pool coverage, which provides pickups from many key locations. At Cape Kennedy, there were eight pool locations for the Gemini 4 flight, manned and equipped by the pool members. These locations included a unit that covered the astronauts as they traveled from the suit-up area on Pad 16 to the Pad 19 launch site in the NASA transfer van and an unmanned vidicon camera inside the "white room" (so-called because it is kept as clean and dust-free as possible) atop the Titan missile and from where the astronauts enter their capsule.

Another pool location was at Patrick Air Force Base, several miles south of Cape Kennedy, where a television camera was linked to the powerful Boston University telescope known as the "BU Scope." It is this camera that provides the spectacular view of the separation of the launch vehicle's burned-out first stage and the ignition of the second stage of the rocket nearly 100 miles away.



NBC color telecast of post-launch news conference with NASA and Air Force officials.

In addition, the pool at Cape Kennedy also had access to the output of 10 unmanned vidicon cameras permanently installed in the Pad 19 complex. From these cameras, and the manned cameras, the pool producer in the pool switching center selects the best picture at any one moment and sends it to each of the three networks.

PREPARATIONS AT HOUSTON

While facilities were being organized at Cape Kennedy, similar activity was taking place at Houston. There, however, a major construction project was under way. This was the building of a penthouse studio atop the seven-story Crest Motel. The studio was built with glass walls that permitted a view over the flat Texas plains of NASA's Manned Spacecraft Center, a complex of low buildings.

From this studio, Huntley and Brinkley broadcast together during the coverage of the Gemini 4 flight — the first

time they broadcast from the same studio since they covered the 1964 Presidential conventions and election for NBC News. In fact, the desk they used during the Gemini 4 coverage was identical to the one they sat behind last year.

The studio was built as a permanent structure, and NBC scenic designer Hjalmar Hermanson, who planned the design, had an early opportunity to prove its sturdiness. The day the studio was completed, a thunderstorm with gale force winds was forecast for Houston. When the storm began, Hermanson went into the studio and remained there, alone, until the wind and rain stopped. He was happy to report to his colleagues that the studio was weathertight and as solid as the motel underneath.



Huntley and Brinkley in NBC penthouse studio overlooking NASA's Manned Spacecraft Center, visible in the background.

Seven stories below the studio, in a room normally reserved for banquets, was NBC News' Houston television control room. Its function, like its crammed counterpart at Cape Kennedy, was to provide a location where a producer could see all the pictures available from the NBC cameras at Houston and the pool feed in order to select one to send to New York.

As the launch day approached, activity mounted at both Cape Kennedy and Houston as more engineering personnel arrived to man the equipment and the editorial staff arrived. The latter group plays an important role in the planning of features and interviews with various experts that make the complicated details of the actual space mission clear to viewers.

For example, during the launch-day coverage, NBC-TV viewers saw a space suit similar to the one that Major White wore during his "walk in space" as an executive of the company that made the suit explained how it protects the astronaut. In another interview feature, the ejection seat that would provide the astronauts with a quick means of leaving the space capsule in case of a malfunction during the launch was explained by an authority on that aspect of the flight.

LAUNCH DAY MINUS SEVEN

One week before launch day, McGee and Mueller arrived at Cape Kennedy to complete their preparation for the flight, which they started weeks earlier in New York.



Producer Jim Kitchell (white shirt), of NBC News, calls the shots in NBC's mobile control room.

About the same time, Huntley and Brinkley arrived in Houston, where they originated their nighttime "Huntley-Brinkley Report" the week of the Gemini flight.

Each correspondent devoted a considerable amount of time preparing to report the flight in order to give a knowledgeable description of what was happening. "An oral exam in the presence of millions" is the way McGee describes his role in reporting a space mission.

One of the "textbooks" that was used by NBC News correspondents and other editorial and production personnel concerned with the flight was a thick, blue-covered, looseleaf binder of some 300 pages crammed with all sorts of facts on every aspect of Gemini 4. The book, written and constantly updated by NBC News writers, covers such areas as: the history and functions of NASA; details on all the NASA and Air Force facilities at Cape Kennedy and the NASA facilities at Houston; biographies of all U.S. astronauts and how they were selected; descriptions of the Gemini space suit and spacecraft; how the recovery of the astronauts would take place; highlights of the Gemini 4 flight plan; information about the Titan launch vehicle; and many other subjects.

In addition, the correspondents refer to many other publications that they feel will help them to understand the purposes of the flight and what is taking place while the astronauts are orbiting the earth.

For instance, a visit to Mueller's motel room a few days before the flight revealed a room filled with government and industry manuals and charts that he was studying. These included the two-inch-thick flight plan for the Gemini 4 mission, manuals on the Gemini spacecraft, its communications systems, and the Titan rocket. Charts showed the flight path of the capsule during each of its 62 orbits, and a large photograph detailed the capsule's instrument panel.

The preparation for space coverage has become more complicated as the television coverage and the missions themselves have increased in length and complexity.

"It's quite a bit different today than in those early days of 1957 when I watched the first United States attempt to orbit a satellite," says McGee. "All I had then was a pair of binoculars, and I had to relay the descriptions of the launching from a portable radio transmitter installed in a

car parked on a public beach five miles from the launch pad."

LAUNCH-DAY COVERAGE BY TV

Only seven years later, covering the Gemini 4 launch, Hagan sat in NBC News' television control room in New York with monitors showing color pictures not only from Cape Kennedy but also from Houston and the World's Fair.

An estimated 25 million viewers saw the launch on television. Many of these viewers, who watched NBC-TV, were able to see a live rocket launching for the first time in color.

Later that day, during NBC News' nine and one-half hours of continuous coverage on June 3, the extraordinary 20-minute conversation between astronauts McDivitt and White was broadcast live while White floated in space.

For the next four days of America's historic space event, NBC News' unprecedented television coverage kept viewers informed of its progress in 82 special reports before each regularly scheduled program. More detailed reports were presented in eight special programs up to one hour in length, and in regularly scheduled news programs. In all, NBC News' TV coverage of the space mission during the flight (June 3-7) totaled 20½ hours, more coverage than any other network presented.

"The coverage of GT-4 was the first real space-age test for television," said *Newsweek* magazine, "and it has already set new patterns for broadcast journalism."

Just as space coverage in 1958 seems primitive compared to that of 1965, by the end of the decade viewers will most likely think the same of today's attempts. For, as America's space achievements grow and more ambitious flights are planned, with the ultimate goal of landing a man on the moon, viewers can rest assured that the electronic journalism of television will keep them informed along the way.



Merrill Mueller, NBC News correspondent, asks a question during post-launch news conference at Cape Kennedy.

With television pictures already being transmitted back to earth from cameras hitting the moon, it is entirely within the realm of possibility that viewers in homes across the country will be able to watch the first man to step on the surface of the moon. Once again, reality rivals even the most fantastic dreams of man. ■

Computers and Legislation

by Thomas I. Bradshaw

A “best seller” in the legislative wing of Florida’s stately Capitol has proved to be a computer-generated daily log covering thousands of bills and scores of actions taken from introduction to final fate — an opus that has been dubbed “instant history.”

This “electronic score card” program, which was activated at the opening of the 1965 Florida Legislature on April 6, has attracted the interest of lawmakers from other states and members of the U.S. Congress, who have been plagued with the seemingly insurmountable task of keeping informed by traditional methods of legislative reporting.

At the start of this year’s Florida Legislature, it was anticipated that some 3,000 bills would be introduced during the two-month session. The total eventually reached 4,600.

This spring, Florida’s state representatives and senators for the first time were able to put their fingers quickly on any given piece of legislation — to answer an inquiry from a constituent, to follow the progress of bills with which they were directly involved, or to evaluate measures they might wish to pursue.

Popularity of the computerized Legislative Index was immediately evident around the tables placed outside the Senate and House chambers. Secretaries and aides stood in line to consult copies of the computer report, and newspaper, radio, and television representatives took advantage of the computer-prepared digest as a guideline for their coverage of legislative activities.

“Evidence is clear to me now that this effort could in large measure revolutionize the legislative process,” says Senate President James Connor. “These computer records give to each senator instant history of all bills and serve to answer many questions that formerly required extravagance in time and effort.”

House Speaker E. C. Rowell has this to say: “I heard praise of our new electronic program ringing throughout the entire Capitol Center. Data processing certainly has found its place in the Florida Legislature.”

Prior to the daily computer reports, legislators seeking information on a specific bill had to visit the office of the Chief Clerk of the House or Senate Secretary, a chore involving considerable time and inconvenience since as many as 150 actions can be taken on the floor or in committee on a bill before its enactment or rejection.

“Now, they can tell at a glance the status of every bill,” says J. Ed Straughn, Director of Florida’s Revenue Commission, whose RCA 301 data processing system did the work in its spare time. “The reports keep legislators

in close touch day by day with all actions taken by their colleagues. These reports of the previous day’s actions, available before the next session began, made members of the 1965 Legislature better informed and, therefore, more effective representatives of their constituents and the State of Florida.”

The system was adopted by the Florida Legislature on the recommendation of Senate Secretary Edwin Fraser and Mrs. Lamar Bledsoe, House Chief Clerk, after an inspection of a computer project in Iowa. The Iowa system entails a time lag of one to two days. In Florida, a report on legislative actions is available by 8 A.M. daily, including those taken in committee sessions the previous night.

The great diversity of Florida’s economy makes it all the more imperative that each legislator be familiar with the measures sought by adjoining or even far-removed counties. Consider the following:

- Tourism is, of course, one of the major aspects of Florida’s revenue input. A bill submitted for the purpose of obtaining an airport for one municipality — or the enhancement of an existing one — could have certain effects on other localities.
- Forest-fire measures authorized by specific legislation for one area of the state could have a direct bearing on the needs and programs of other regions.
- A resident of Dade County (Miami) has a definite interest in bills affecting the handling of the state’s beef production, particularly where there is a possible reaction on the prices the Miami housewife will pay for her steaks or hamburger.
- Although the Florida citrus crop is confined to one portion of the state, legislation governing that facet of the agricultural picture is of interest to those living outside the citrus belt.
- The state’s waterways, both land-locked and sea-connected, are of great concern to all Florida residents, both from the standpoint of food supply and in the field of recreation.

In brief, every member of the Legislature has a need to know about all bills put in the hopper at the capitol in Tallahassee. Without such readily available reference to the tremendous volume of legislation on an up-to-date basis, he cannot operate at maximum efficiency. He is, in effect, in the same position as a scholar would be in a large library with no librarian and no index to direct him to the facts and figures he requires. To carry the comparison further, the scholar may track down his book but it may very likely not be the latest edition available.

It was this pressing need for a better way of doing

THOMAS--S.B. 155, S.B. 202, S.B. 203, S.B. 215, S.B. 232, S.B. 233,
S.B. 235, S.B. 236, S.B. 245, S.B. 267, S.B. 268,
USHER--S.B. 38, S.B. 74, S.B. 110, S.B. 120,
S.B. 160, S.B. 170, S.B. 171, S.B. 174,
S.B. 179, S.B. 180, S.B. 201, S.B. 213,
S.B. 248,

H.B. 5

BY McDONALD,

AMENDS S. S. RELATING TO INCUR DEBT FOR
SIZES SUWANNEE COUNTY BOARD OF PUBLIC INSTRUCTION TO INCUR DEBT FOR
UTILITIES.

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005-9	04/09	ORDERED
006-9	04/09	SIGNED B
---	04/09	FILED W

ED TO GOVERNMENTAL ORGANIZATION LOCAL. H.J. 0019
VERNMENTAL ORGANIZATION LOCAL. H.J. 0033
YEAS 110 NAYS 0. H.J. 0033
40 NAYS 0.

GOVERNOR

H.B. 130

BY ONEILL, AND OTHERS,
PROVIDES FOR THE GOVERNOR TO APPOINT
FLORIDA INLAND NAVIGATION DISTRICT,
CONSERVATION ACTIONS COMPLETED

000-9	04/09	
001-9	04/09	
002-9	04/16	
003-9	04/21	
004-9	04/21	
005-9	04/23	
006-9	04/23	
007-9	04/23	
008-9	04/26	
009-9	04/29	
010-9	04/29	
011-9	05/04	
012-9	05/04	
013-9	05/05	
014-9	05/07	
015-9	05/07	

INTRODUCED, REFERRED TO WATER RE
RECOMMENDED FAVORABLE WITH AMEND
WITHDRAWN FROM APPROPRIATIONS.
PLACED ON GENERAL CALENDAR.
AMENDMENTS ADOPTED. H.J. 0204
PASSED HOUSE, AS AMENDED, YEAS
IMMEDIATELY CERTIFIED TO SENATE
RECEIVED, REFERRED TO WATER RE
RECOMMENDED FAVORABLE, PLACED
PASSED SENATE, AS AMENDED, YEAS
AMENDMENT TO SENATE AMENDMENT ADOPT
HOUSE CONCURRED IN AMENDMENTS TO
HOUSE CONCURRED IN AMENDMENTS TO
SENATE CONCURRED IN ONE AMENDME
SENATE REFUSED TO CONCUR IN AMEN

Florida's
computerized
Legislative
Index
provides its
lawmakers
with an
"instant history"
of all bills
under
consideration.

OWNERS OF THE
BOARD OF

APPROPRIATIONS. H.J. 00
CONSERVATION. H.J. 0144

CONSERVATION. S.J. 166

H.B. 131

BY ONEILL, AND OTHERS,
RELATES TO ORGANIZATION OF THE FLORIDA COM
BY DECREASING NUMBER OF COMMISSION MEMBERS
ACTIONS COMPLETED

000-9	04/09	
001-9	04/12	
002-9	04/16	
003-9	04/21	
004-9	04/21	
005-9	04/26	
006-9	04/28	
007-9	04/30	
	05/07	

INTRODUCED, REFERRED TO PUBLIC WELFARE
COMpanion S. B. 83.
RECOMMENDED FAVORABLE, PLACED ON GENER
PASSED HOUSE, YEAS 106 NAYS 0. H.J.
RECEIVED, PASSED SENATE, YEAS 44 NA
ORDERED ENROLLED. H.J. 0352
SIGNED BY OFFICERS AND PRESENTED TO GOVE
BECAME LAW WITHOUT APPROVAL.

H.B. 132

BY ONEILL, AND OTHERS,
AMENDS F. S. RELATING TO THE STATE PURCHASING COM
CONTRACTS BY STATE OFFICERS AND EMPLOYEES AND REQU
RECORDS. ACTIONS COMPLETED

000-9	04/09	
001-9	04/12	
002-9	04/19	
003-9	04/22	
004-9	04/22	
005-9	04/29	
006-9	04/30	
007-9	04/30	
008-9	05/03	
009-9	05/06	

INTRODUCED, REFERRED TO GOVERNMENTAL ORGANIZATION STATE. H.J. 0051
COMpanion S. B. 79.
EXTENSION OF TIME GRANTED COMMITTEE GOVERNMENTAL ORGANIZATION STATE. H.J. 0145
RECOMMENDED FAVORABLE WITH AMENDMENT, PLACED ON GENERAL CALENDAR. H.J. 0265
COMMITTEE SUBSTITUTE SUBSTITUTED. H.J. 0389
AMENDMENTS ADOPTED. YEAS 103 NAYS 0. H.J. 0422
PASSED HOUSE, AS AMENDED, H.J. 0422
RECEIVED, REFERRED TO JUDICIARY "B" S.J. 256
RECOMMENDED FAVORABLE WITH AMENDMENT, PLACED ON GENERAL

H.B. 134

BY ONEILL, AND OTHERS,
AMENDS F. S. PROVIDING
COMMISSION GOVERN



Members of the Florida State Legislature watch computer production of daily report on one of the more than 3,000 bills considered during the 1965 session. These RCA 301 computer reports, produced overnight, provide a complete history of all bills in the legislative hopper.

things that prompted the House and Senate to send Mrs. Bledsoe and Mr. Fraser to Iowa to see what that state was doing with a computer in the field of legislative indexing. What they saw was good enough to convince them that Florida *had* to inaugurate a similar program.

They were not completely satisfied with the end results in Iowa, but in their report upon their return to Tallahassee they noted that the Iowa project pointed the way.

After a series of conferences among legislative leaders, it was decided to proceed with the Legislative Index program. The RCA 301 serving the Florida Revenue Commission was available to take on the job, and the Commission's data processing team felt confident the program could be put into effect with little difficulty.

Computer specialists from the Commission and RCA Electronic Data Processing put their heads together. They came up with a system of numerical codes, employing either three or four digits, designed to facilitate the flow of information into the computer system.

The team of computer programmers began by assigning code numbers to each member of the House and Senate. Other code listings were drawn up for all standing committees in both chambers, for approximately 180 actions that are repetitive and applicable to many bills, and to 475 major legislative categories ranging from wildlife conservation to worthless checks.

For example, Senator S. D. Clarke, of Jefferson County, is known to the computer as 007, a number popularly associated with Ian Fleming's fictional hero, James Bond.

The Senate standing committee on temperance became, for data processing purposes, No. 342.

The code number 710 represents introduction of legislation, while 503 indicates the measure was adopted, and 979 in computer language means "withdrawn."

The official records of actions on the floor or in committee are the House and Senate journals. Pages for these manuscripts are prepared on a spot basis by clerks assigned to the two chambers and committee sessions. Their notations are prepared for printing in the journals — which are not readily available to individual senators or representatives.

To adapt the procedure to computerization, a separate group of clerks was assigned to strategic locations during sessions. Using the "raw" text of journal pages, these specialists entered code numbers on mimeographed forms to indicate actions taken, sponsors of bills, and the category involved.

William H. Corbett, Director of Data Processing for the Revenue Commission and the State Comptroller's office, says that, through use of the numerical codes and standard reporting forms, the computer clerks did not have to resort to tedious pencil-pushing to relay the information for preparation of the electronic score card.

The forms with encoded insertions were sent to the Revenue Commission's computer center in the Carlton Building, a block from the capitol. There, a team of key-punch operators turned out punched cards to feed the information into the computer system, including permanent entry on the magnetic "history tape."

The entire process was further expedited each morning by the entry into the computer of all new bills that had been filed for introduction on that specific day. In other words, the computer had initial data on legislation even before formal introduction on the floor.

All the encoded forms were in the hands of the data processing center by 7 or 8 P.M. daily. Within two hours, the computer was turning out the individual printout sheets that made up the compiled log or score-card report.

The process of updating information in the computer's memory continued through evening committee sessions. As a result, the overnight report — distributed to the scheduled points of reference — had the very latest accounting, even of actions taken but a few hours earlier.

The computer production included not only the score-card printout but a voluminous index to make it that much simpler for legislators and others to turn quickly to a specific bill in the Legislative Index.

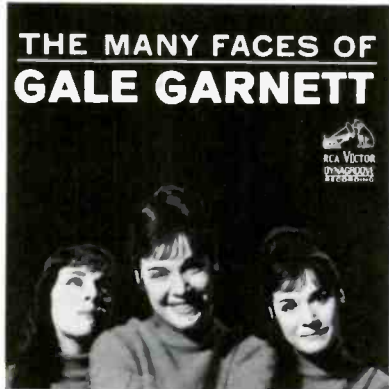
A separate computer-motivated report listed the bills introduced by the various members of the House and Senate by bill number and by member name.

During the 1965 session of the Legislature, 30 copies of the daily log were produced each night. Plans for the next session call for the production of sufficient copies for all representatives, again on an overnight basis.

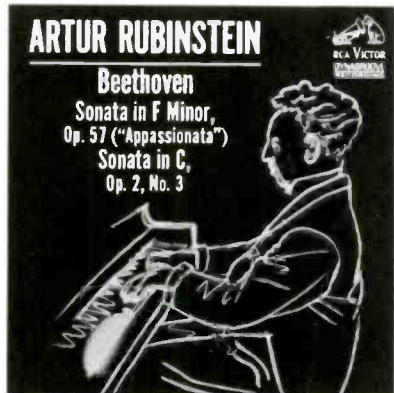
At the conclusion of the recent session, a complete computer-prepared report on all bills moving through the legislative process was produced for each lawmaker. The same plan will be followed at subsequent sessions.

"The modern computer equipment and techniques at our disposal make it possible to do a wide variety of things," says Director Straughn. "In effect, we can plow the data field, sow the seed, and reap the information harvest with the same tool." ■

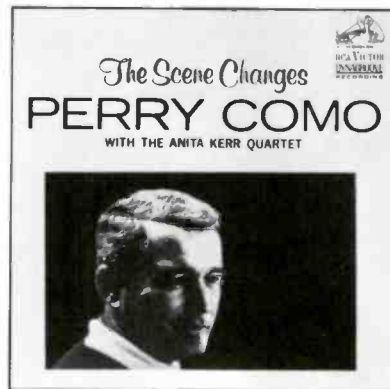
For the Records...



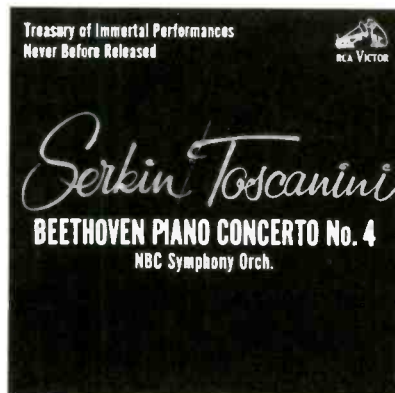
"THE MANY FACES OF GALE GARNETT": (RCA Victor LPM/LSP 3325). It was a song titled "We'll Sing in the Sunshine," which Gale Garnett composed and recorded for RCA Victor, that skyrocketed this folk singer to fame. In his introduction to her newest album, TV's Pernell Roberts describes Gale Garnett's face in the light of her first hit record as "triumphant, and yet awed," "the bright face" during her TV stint on "Bonanza," and "the hungry face" during the "lean months." The songs include "Won't You Be My Lover, O," "Ain't Gonna Stay in Love Alone," "I Wish You Were Here," and "St. James Infirmary."



BEETHOVEN: SONATA IN F MINOR ("Appassionata") and SONATA IN C: Artur Rubinstein, Pianist (RCA Victor LM/LSC 2812). These are the first Beethoven sonata recordings in Dynagroove sound. Rubinstein, long recognized as a master of Beethoven's piano repertoire, returns for a fresh view of the "Appassionata," his first in stereo. Even newer to Rubinstein's recorded repertoire is the performance of the Sonata from Opus 2, one of the major sonatas from Beethoven's early period. It is infused with a youthfulness and zest for life that allows Mr. Rubinstein to prove that, at 76, he is as young in spirit as any pianist now performing.



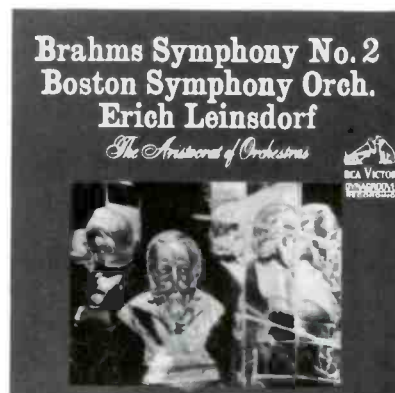
"THE SCENE CHANGES": Perry Como with The Anita Kerr Quartet (RCA Victor LPM/LSP 3396). This album presents the great "Mr. C" in "The Nashville Sound," and it is a combination in a recording that will not soon be forgotten. Produced by Chet Atkins, the songs provide Perry with the sort of relaxed material for which he is so justly famous — "Where Does a Little Tear Come From," "Dream on Little Dreamer" (also a hit single), "Sweet Adorable You," and others. The Anita Kerr Quartet provides the vocal accompaniment to Como.



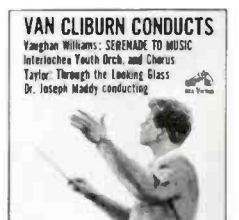
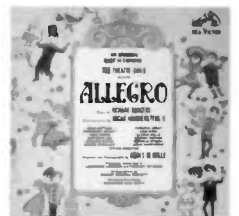
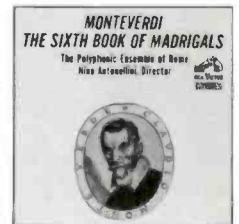
BEETHOVEN: PIANO CONCERTO NO. 4: Rudolf Serkin, Pianist, and Arturo Toscanini conducting the NBC Symphony Orchestra (RCA Victor LM 2797). This Treasury of Immortal Performances album captures one of the great moments in musical history. Taken from the NBC Symphony broadcast of November 26, 1944, this performance was one of only two in which Toscanini and Serkin collaborated as conductor and soloist (on both occasions, this G Major Concerto was performed). Serkin's feelings about the concerto coincided with those of Maestro Toscanini, and, in the 20 years since this broadcast, musicians look back to it fondly. The qualities that made it remarkable then are just as remarkable now that it is being released as a recording.



"HALF A SIXPENCE": Original Broadway Cast Recording, starring Tommy Steele (RCA Victor LOC/LSO 1110). When this delightful British musical with music and lyrics by David Heneker arrived on Broadway, it immediately became one of the hits of the season and catapulted its leading man Tommy Steele to stardom. Praised by critics as a show with wonderful tunes, "Half a Sixpence" is a natural as an original-cast album. Its songs include "All in the Cause of Economy," "If the Rain's Got to Fall," "Long Ago," and "I Know What I Am" — the kind one hums upon leaving the theater.



BRAHMS SYMPHONY NO. 2: Boston Symphony Orchestra, Erich Leinsdorf, Music Director (RCA Victor LM/LSC 2809). In the three years that Leinsdorf has been music director of the Boston Symphony Orchestra, he has displayed an affinity for virtually every type of music. His recordings with the "Aristocrat of Orchestras" have ranged from world premieres of new works to such composers as Prokofiev, Bartok, and Mahler. But Leinsdorf also has maintained a close association with the "bread and butter" classics of the standard repertoire—Beethoven, Brahms, Schubert. About a year ago, he recorded the Brahms Symphony No. 1; now comes No. 2, considered by many music lovers to be his most consistently melodious and engaging symphony.



OTHER CURRENT RELEASES

HELP FOR MOTORISTS

At one time or another, most drivers have wondered whether they might be going in the wrong direction on a one-way street. Now, the doubt can be eliminated by a new electronic device that lights up a roadway sign to warn the motorist of his error.

The new directional vehicle detector was developed as a result of studies in traffic-control equipment conducted at RCA's David Sarnoff Research Center in Princeton, N.J., and the RCA Industrial and Automation Products Department at Plymouth, Mich. The device operates from two wire loops embedded in the pavement. The loops are attached to a roadway control box and carry circuits that are individually tuned and arranged in sequence. A vehicle traveling over them in the wrong direction causes electrical changes in the circuits.

The signal thus generated can be used to illuminate a traffic sign directing the driver to turn back, or it can be set up to flash warning blinkers or in some other manner call the driver's attention to the fact that he is going the wrong way. The system's circuits are arranged so that they ignore vehicles passing over them in the proper direction.

The new device is expected to be especially useful on entrance and exit ramps of limited-access highways. In such areas, it could be used not only to alert an erring motorist but also to warn other motorists of a vehicle approaching from the wrong direction.

BEHIND-THE-WEATHER RADAR

In recent years, scientists and engineers have developed an imposing array of equipment to help aviators cope with the difficulties of storm, cloud, and fog. Among the newest electronic aids to aviation is an all-weather radar system that provides twice the usual range and allows the pilot to see the weather behind the cloud formations directly in front of him.

The new system, designed for high-performance jet transports, is a transistorized version of the AVQ-10 radar and is already in use in commercial airliners in the U.S. It is supplied by RCA's Aviation Equipment Department. Its advanced features can be retrofitted into the 2,500 "first generation" AVQ-10 systems currently used by some 50 airlines throughout the world.

TIROS: HONOR AND ACHIEVEMENT

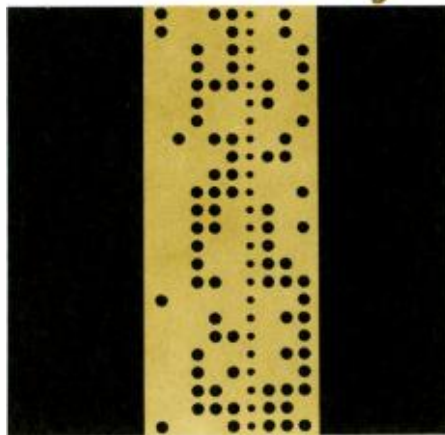
On April 1, 1960, TIROS 1, the world's first meteorological satellite, was launched by the National Aeronautics and Space Administration. On April 1, 1965, the prototype of that

first operating weather satellite was presented by NASA to the Smithsonian Institution's National Air Museum. During the five years 1960 to date, nine additional TIROS vehicles have been orbited and have provided meteorologists with a continuous supply of accurate weather information.

The TIROS satellites, built by RCA's Astro-Electronics Division for NASA, are the first spacecraft used daily in the performance of a public service by the U.S. government. Information received, by mid-July, from two of them — TIROS 8 and 9 — has resulted in more than 1,500 storm bulletins considered instrumental in the prevention of loss of life and property. Some 500,000 pictures of cloud cover, ice floes, and other weather phenomena have been transmitted to earth from the RCA cameras aboard the 10 TIROS spacecraft.

The TIROS prototype that NASA presented to the Smithsonian is the third RCA-built space system so honored. The communications system that sent the first message from space aboard the SCORE satellite — President Eisenhower's Christmas message in 1958 — was presented to the Institution in July, 1964. Relay 3, the unlaunched counterpart of the Relay 1 and 2 communications satellites, both still operational, was presented in August, 1964.

Electronically



Speaking...

Even as the TIROS prototype was enshrined in a place of honor, the orbiting TIROS vehicles continued to establish new records. Not a day has passed in more than three years that earth weather has not been observed by a TIROS satellite, and four of the meteorological spacecraft — TIROS 7, 8, 9, and 10 — are operational. On June 19, TIROS 7 completed two years of daily operation.

In early April, TIROS 9 became the first of its family to perform a turn-around maneuver in orbit upon electronic command from the ground.

NEW COMPUTER MEMORY UNIT

A high-speed memory that is an industry "first" and potentially one of the simplest and most economical approaches to producing complex memory systems has been made available to computer manufacturers by RCA Electronic Components and Devices.

The unit, now in pilot production for tests and evaluation, represents a major advance in computer memory technology.

Since the monolithic ferrite device is "batch processed," the tedious and expensive tasks of core-stringing and handwiring are eliminated. The new process employs tissue-thin layers of conventional ferrite material fired into a solid monolithic ferrite wafer one inch square and five one-thousandths of an inch thick. It is designed to withstand shocks and vibrations encountered in air and space applications.

KING-SIZE TAPE RECORDER

A giant tape recorder — one of the most sophisticated and perhaps the largest in existence — has been delivered to the Advanced Research Projects Agency by RCA's Missile and Surface Radar Division.

The seven miles of tape on the machine's huge reels hurtle through its guides at a speed of more than 60 miles per hour. The usable length of the tape is five miles. A mile of tape is used to accelerate to the mile-a-minute speed, and a mile is required to stop the machine. The tape is supported and lubricated by compressed-air bearings to minimize friction at the high speed, and mechanical tolerances on critical parts of the machine have been kept to millionths of an inch.

The mammoth recorder is capable of taping and playing back 12 television programs simultaneously, but it will be put to a somewhat different use: recording radar signals obtained from ballistic missiles.

On 14 of its 15 channels, the machine records data on targets within the radar beam. This information can be played back through the radar system for analysis of the characteristics of the ballistic devices.

ABOUT OUR WRITERS

STANLEY APPENZELLER is a staff writer in the Press Department of the National Broadcasting Company . . . DESMOND SMITH, the New York correspondent for *The Economist* (London), is a frequent contributor to American magazines . . . THOMAS LASK reviews spoken-word recordings for the *New York Times* and is a member of its *Book Review* staff . . . EDWARD W. ATKINSON is on the RCA corporate staff . . . THOMAS I. BRADSHAW is a staff writer at the Electronic Data Processing division of RCA.

An RCA technician observes the "read-out" area of this RCA computer mass memory system, which can store 5.4 billion letters, numbers, or other symbols for recall in a fraction of a second. Magnetic cards 4.5 inches deep by 16 inches long each can contain 166,000 such data characters. The cards, selected electronically, are fed past the read head shown here. Once the information has been pulled out for processing by the computer, the magnetic card continues "around the horn" to its original location.



ELECTRONIC AGE

Summer 1965

