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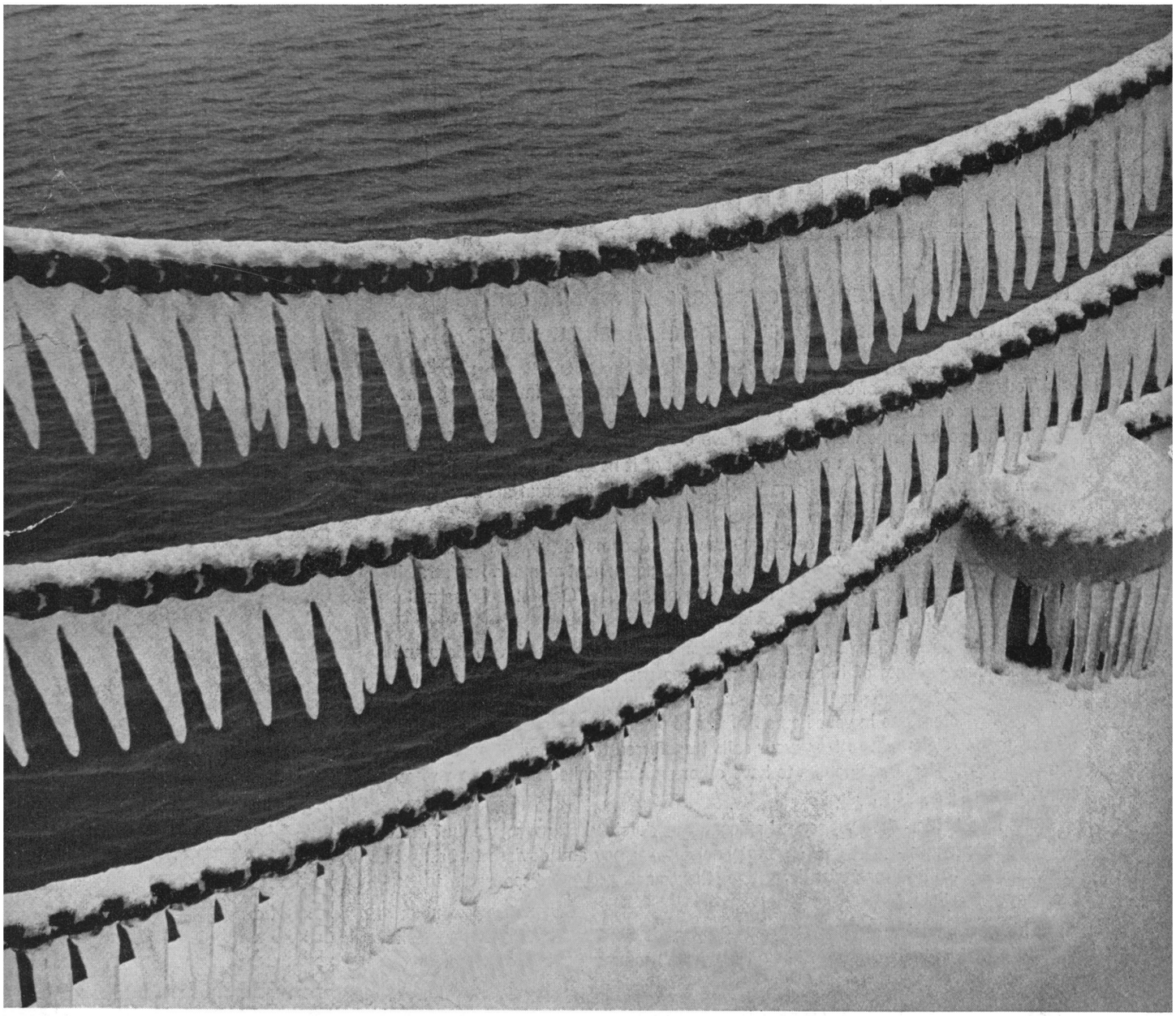

Index Issue

A HISTORIC TELEPHONE EXPERIMENT BEGINS IN AN ILLINOIS TOWN

New technology brings the dream of an electronic central office to reality . . . foreshadows new kinds of telephone service.

Today, the science of communications reaches dramatically into space, bouncing messages off satellites. But an equally exciting frontier lies closer to home. Bell Telephone Laboratories engineers have created a revolutionary new central office. At Morris, Illinois, an experimental model of it has been linked to the Bell System communications network and is being tried out in actual service with a small group of customers.

This is a special electronic central office which does not depend on mechanical relays or electromagnets. A photographic plate is its permanent memory. Its "scratch pad," or temporary memory, is a barrier grid storage tube. Gas-filled tubes make all connections. Transistor circuits provide the logic.

The new central office is versatile, fast and compact. Because it can store and use enormous amounts of information, it makes possible new kinds of services that will be explored in Morris. For example, some day it may be feasible for you to ring other extensions in your home . . . to dial people you frequently call merely by dialing two digits . . . to have your calls transferred to a friend's house where you are spending the evening . . . to have other numbers called in sequence when a particular phone is busy.

The idea behind the new central office was understood 20 years ago, but first Bell Laboratories engineers had to create new technology and devices to bring it into being. A Bell Laboratories invention, the transistor, is indispensable to its economy and reliability.

This new experiment in switching technology is another example of how Bell Telephone Laboratories works to improve your Bell communications services.

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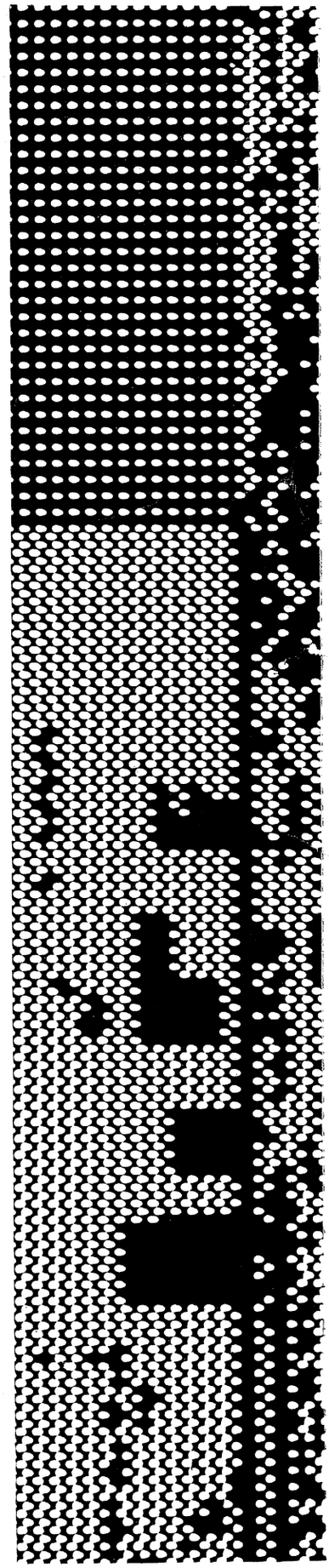

Part of a memory plate of the new electronic central office is shown at right (enlarged 8 times). Spots are coded instructions which guide the system in handling calls and keeping itself in top operating form. Over two million spots are required. Logic and memory are physically separated in the machine, so new functions can be easily added. The experiment is being conducted in co-operation with the Illinois Bell Telephone Company and the Western Electric Company.

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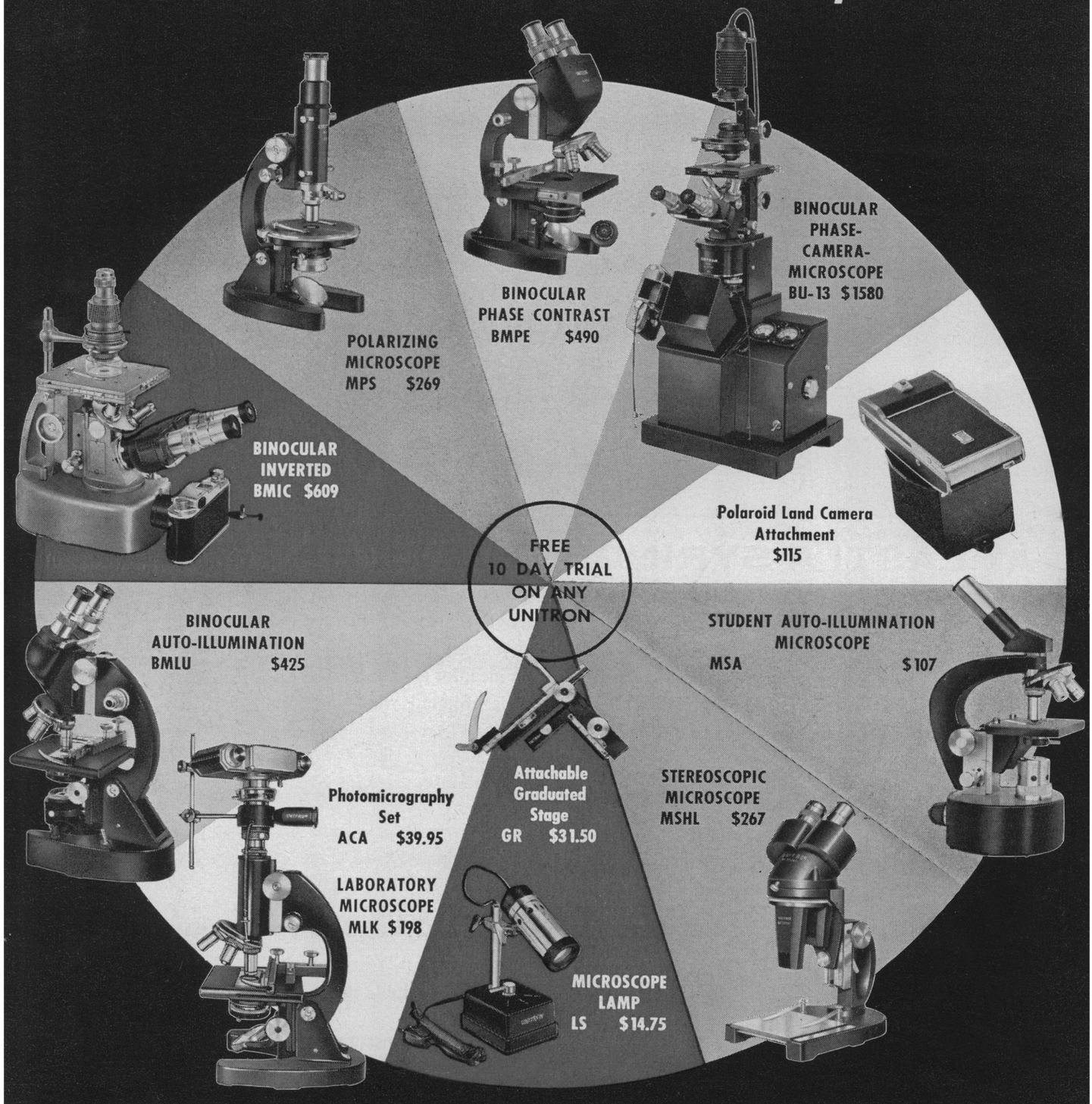

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Cover

Ice formed during a winter storm on the chain railings at the U.S. Coast Guard lighthouse in Milwaukee harbor. [G. Koshollek, Jr., Milwaukee, Wis.]

Letters

The Pharmacist and Poison Control

As a pharmaceutical educator and research worker I was delighted to read the editorial "Middle ground" [*Science* **132**, 1221 (28 Oct. 1960)] concerning the excellent outcome of the poison control center concept, which has now spread throughout the United States. I feel, however, that you have left out a very important group of people who must daily supply information on poisons and whose acts, even though not documented, have contributed materially to saving many lives. These dedicated public health workers are the pharmacists in retail practice, hospital pharmacy, and industry. In fact, in many communities it has been the drive of the community pharmacist that has led to the setting up of an adequate center.

Furthermore, because of the pharmacist's particular background in the physical and biological sciences, which includes an exhaustive course in pharmacology, he seems well equipped to initiate and guide in the establishment and operation of a poison control center.

Schools of pharmacy are now including subject matter associated with poison control centers as a further service that the pharmacist can perform for his community in conjunction with the medical practitioner. Also, it should be kept in mind that many of the ingredients needed for poison control are part of the stock of drugs and chemicals that a well-organized pharmacy carries.

I do not wish to detract from the recognition accorded any other group in this very important public health service, but I do want to have it known that pharmacy is contributing materially to the over-all program.

JOHN AUTIAN

College of Pharmacy,
University of Texas, Austin

Nomenclature of Biological Devices

Without wishing to detract from the importance of van Bergeijk's ingenious proposal for naming devices that simulate biological functions [*Science* **132**, 1248 (28 Oct. 1960)], I would like to point out one serious fault in his proposal. This is that it confuses two quite different classes of such devices. On the one hand there are those devices whose purpose is chiefly prosthetic, while on the other there are those which are of interest in scientific or technological investigation. The latter are often made to have a type of isomorphism with natural biological systems, while the former must replace such systems to some extent in function.

Devices that are used to replace biological systems, either temporarily or permanently, are truly artificial organs and should be named as such. A natural way to name these devices is to use the Latin prefix *art-* (or *arti-*), which suggests artifice or something fashioned, together with the Latin name of the organ replaced. Thus, *articor, artipulmocor,* and *artiren* are suggestive of the purposes of the devices that they might name. (Let us hope that some day there will be an *artoculus.*)

One need not insist on the full nominative singular of the Latin name of the organ. Rather, one can construct a modified form, as the Romans themselves might have done—for example, *artiman* instead of *artimanus* and *artihep* for a possible artificial liver.

In case a Latin name is not available or the use of one would be forced, the Greek name would have to be used. However, sometimes a way out of the unpleasant necessity of compounding Latin and Greek roots may be found. Thus in the case of the larynx, for which there is no Latin term, the word *vox* may sometimes be used quite precisely. An artificial larynx like that recently announced by the Bell System, for example, does not truly replace the larynx; rather it replaces the voice. Hence it is an "artivox" and should be so termed.

For naming those devices that are intended as analogs of biological systems rather than as replacements for them, van Bergeijk's proposal seems excellent. For consistency and euphony, the Greek word for the organ simulated should be used as the stem of the name of the simulating device when this is possible. Thus, euphony would be better served if the Perceptron were called an ophthalmomime rather that an oculomime.

To point up the difference between the two types of device and the presently suggested rules for naming them, let us consider the hand. A *chiromime* might be a computer program or a complicated device which imitates and illustrates the functions of the hand; in any case one would expect a considerable degree of sophistication in a device that truly simulates this organ. In contrast, an *artiman* might be only a steel claw serving an unfortunate amputee; with present technology it would have to be fairly simple. Sometime in the future, however, this same amputee might well be able to extend an artiman of friendship, in which case his artiman would also be a chiromime.

PAUL J. BURKE

430 West 24 Street,
New York, New York

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A Small Note of Cheer

In this space (30 September 1960) we joined others in criticizing the State Department policy that prevented the attendance of government scientists at international meetings attended by scientists from nonrecognized regimes. The Department justified its stand by the argument that nonrecognized countries would claim that the presence of U.S. Government employees at such meetings would constitute *de facto* recognition. It is gratifying to note that this policy has been modified—at least for the specific case of the Fifth International Biochemistry Congress, to be held in Moscow next August.

The new ruling is summarized in a letter that Walter G. Whitman, Science Adviser to the Secretary of State, wrote us on 19 December. The pertinent parts of this letter are as follows:

"You may be interested to know that the State Department has recently indicated to the Department of Health, Education and Welfare that it has no objection to that Department's plans for the participation of its scientists in the Biochemistry Congress. This is in accord with the Department's policy of not hindering the participation of Government employees in international scientific meetings if membership and participation are not based upon political considerations and such attendance is in the national interest.

"The Department does not usually accredit an *official* United States Government Delegation to take part in international conferences at which the attendance of nationals of unrecognized regimes is expected. This does not, however, preclude Government employees from taking part in nongovernmental meetings at government expense without accreditation if the Department of State determines that their participation is in the national interest. Without accreditation, a participant does not represent nor speak for his government."

What the State Department is saying in effect is that scientists do not represent our government officially unless the Department says they do. The device used is accreditation, which makes a distinction between a scientist as a governmental representative and a scientist as a scientist.

The change in policy, although it is a step in the right direction, still leaves some problems about international scientific meetings unsolved. If it is good for government scientists to go abroad to find out what foreign scientists are doing, it is also good for scientists of all political complexions to come to international meetings in the United States. Such meetings facilitate the exchange of information not only for government scientists but for all scientists. The difficulty here lies in the cumbersome handling of visas for foreign nationals, in the refusal on political grounds to grant visas to some scientists from recognized countries, and in the lack of a clear-cut formula for dealing with scientists from nonrecognized countries. Perhaps the Department could rule that foreign scientists who are permitted to attend meetings in the United States are accredited not as officials of their countries but solely as scientists.

Complex though the issue is, the holding of international scientific meetings in the United States is clearly in the national interest. The State Department should find a way to encourage such meetings without jeopardizing the policy of nonrecognition. That it has found such a formula for our own scientists encourages us to hope that it can find one for those of other countries.—G.DuS.

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