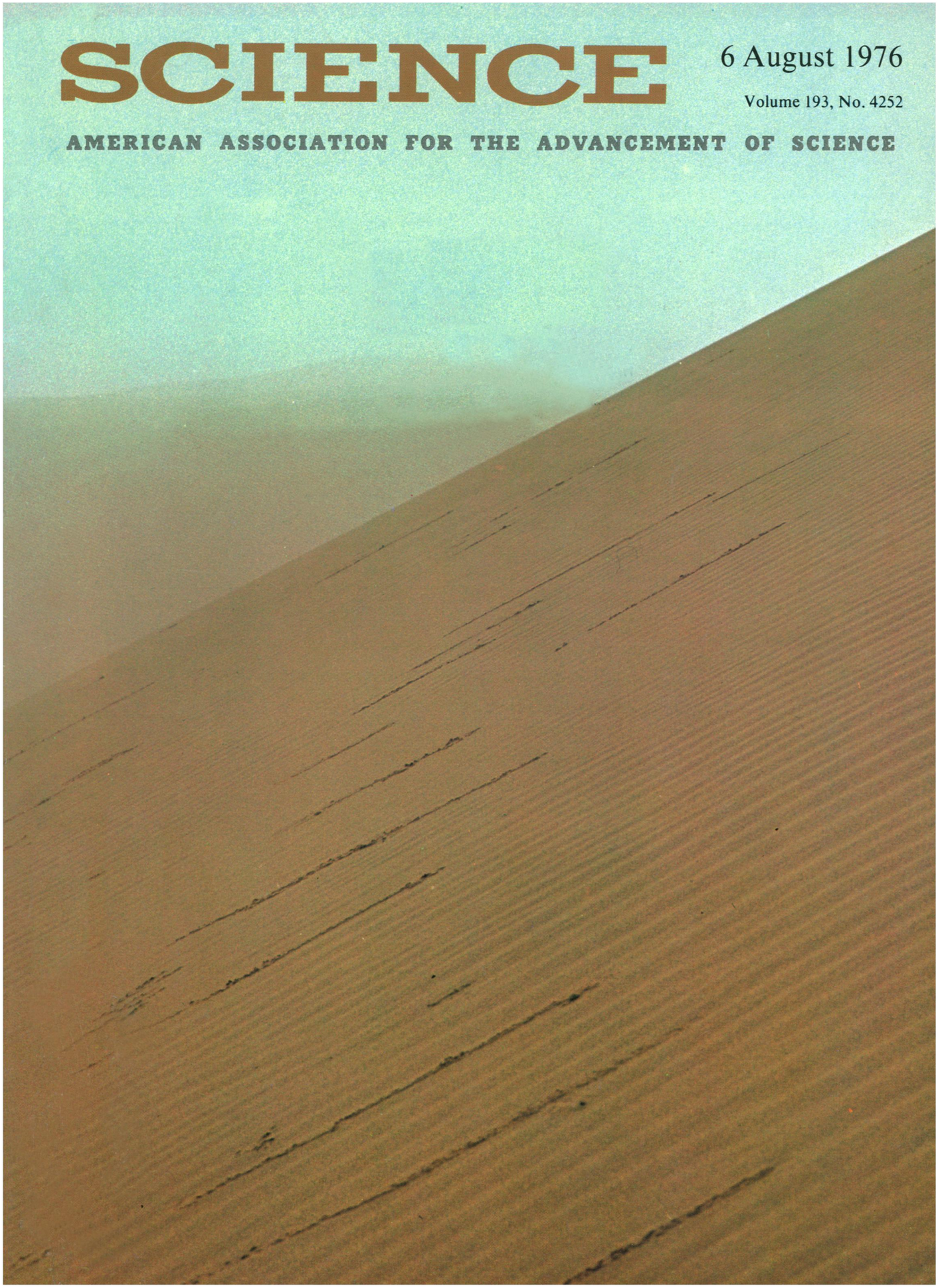
SCIENCE

6 August 1976

Volume 193, No. 4252

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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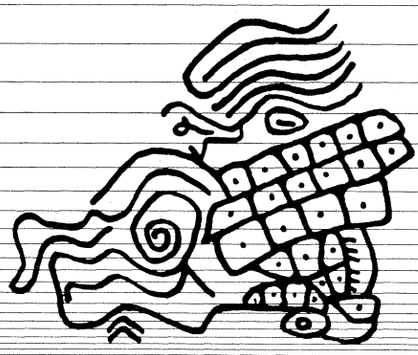

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Volume 193, No. 4252

SCIENCE

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REPORTS

COVER

Parallel trails of Namib Desert tenebrionid beetles, *Lepidochora*, are laid on vegetationless dune sands perpendicular to the prevailing wind during fogs. These tracks concentrate fog water which is extracted by the beetles. See page 484. [William J. Hamilton III, Ecology Institute, University of California, Davis]

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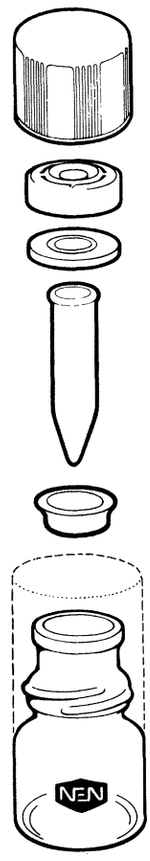

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Western Electric Reports:

Batch bonded crossovers bridge the gap.

A thin-film integrated circuit may be thought of as a road map on which active electronic components (the towns) are linked together by conducting paths (the roads).

In a simple circuit, these paths can be laid out on the same plane. But as circuit complexity increases, some conducting paths must span others in bridge-like constructions that are called crossovers.

Engineers at Western Electric's Engineering Research Center in Princeton, N.J., have developed an improved method for simultaneously constructing thousands of crossovers on a single circuit. In addition to lowering manufacturing costs, the new technique has given Bell Labs engineers even greater freedom in designing thin-film circuits.

Until recently, most crossovers were plated directly on a patterned ceramic circuit board. But plated crossovers are very delicate. And unrepairable defects mean that a relatively expensive patterned circuit board has to be discarded.

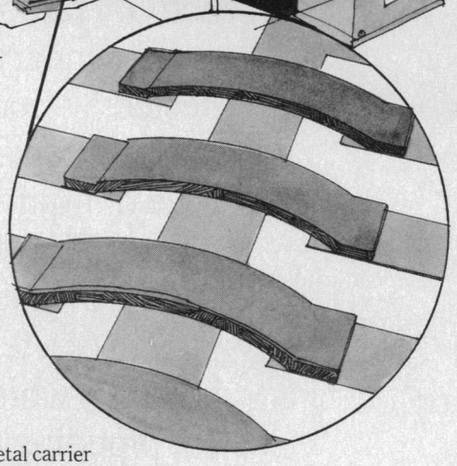
In the new batch bonding technique, an array of crossovers is fabricated on a separate film. They are transferred to a patterned circuit board only after inspection has assured the array is good.

A reusable metal sheet with tiny slits at the desired crossover locations is basic to the new technique. A copper-plastic laminate is glued to the metal sheet with the plastic side against the metal surface. Short, narrow gold lines are electroplated onto the copper side in registration with the slits in the sheet. The copper not gold plated is etched away, leaving an array of gold-plated copper lines on the plastic film.

Applying pressure to this array with a rubber pad forms the gold lines into tiny arches, by pushing them slightly into the openings in the metal sheet. After inspection, the entire array of good arches can be bonded to a patterned thin-film circuit board.

Benefit: Batch bonded crossovers are one more manufacturing innovation that allows the Bell System to meet your communication needs reliably and economically.

For more information, send a large, self-addressed envelope with 24¢ postage affixed to: Advertising Manager, Western Electric, Room 1626, 195 Broadway, New York, N.Y. 10007.



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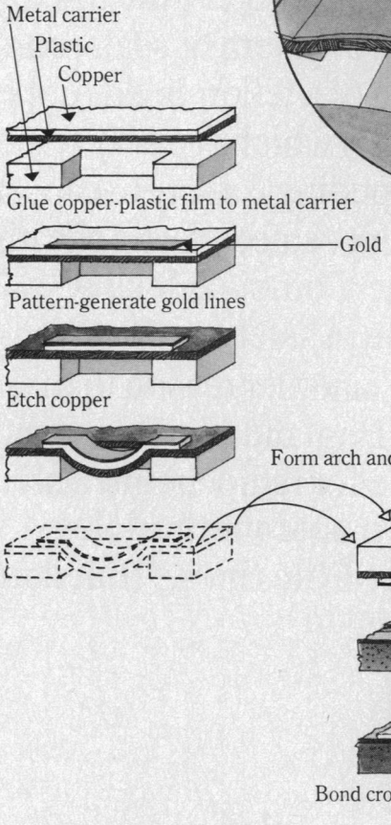

Western Electric

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Interciencia: New Journal, New Journey

Interciencia seeks to foster unity and cooperation between the scientific communities of the Americas and to stimulate interchange so that the uses of science and technology can best serve the cause of development.

The journal will place particular emphasis on Latin America, a group of nations urgently in need of the benefits which science and technology can provide but which has been painfully lacking in regional magazines of a scientific nature.

The differences in science and technology between the northern and southern parts of the hemisphere are evident. In the North, the most advanced country in the world, endowed with funds aplenty, abundant research personnel, and an efficient communications circuit between research and production. In the South, a continent where research is inadequately financed and staffed and where the absence of conduits between science and production tends to increase the already marked dependence of these two fields on the resources of the great country to the North. By way of compensation, the South brims with enthusiasm and faith in science, plainly contrasting with the pessimism which all too frequently is observed in the North, particularly among the younger generations.

Despite the inequalities and differences between North and South, I am convinced that at the level of scientific communities cooperation can and must be fostered in an atmosphere of *convivencia*. The North is endowed with a lengthy experience and a healthy pragmatism which most investigators are eager to share with their colleagues in the South. The South, on the other hand, is freer to explore new paths for the application of science and technology—with different life-styles and values—and could help to demonstrate that other alternatives, besides those that have already been tried and tested, are valid and feasible.

Science and technology should favor development. Though unwilling to minimize in any way the importance that economic growth has at a root level, I believe that full development implies the eradication of a number of ills: poverty, unemployment, extreme economic and social inequalities (between individuals as well as between nations), and an excessive dependence of one country on another. If science and technology are to justify their existence, they will have to help mitigate these ills or make them disappear altogether.

Development, however, should also be understood as an increase in the intrinsic quality of science and technology. Side by side with the research which is applicable to our most immediate social and economic problems, there is a need for the kind of basic science that can shed its own light and permeate, through its cultural, educative, and multiplying effects, all the spheres of our society, including that of applied science, which should not be of lesser quality for being practical.

It is evident that the ways of science and technology are interlocked with the aims of the whole of society. Given the fact that there is no consensus on the type of society which is desirable for Latin America and since one of the principal problems derives from the great differences existing between the nations in the hemisphere, it follows that disagreements and divergent ideas will tend to surface whenever the uses and applications of science and technology are discussed. Far from avoiding such issues, *Interciencia* will welcome controversial opinions as posed, under the full responsibility of each author, provided they are supported by testable facts and written in a style compatible with that of a scientific journal.—MARCEL ROCHE, *Editor,* Interciencia, *Apartado 51842, Caracas 105, Venezuela*

This editorial originally appeared in *Interciencia* **1** (No. 1), 7 (1976). *Interciencia* is a trilingual journal published by the Interciencia Association, a federation of associations for the advancement of science in the Americas. See page 439.

(Continued from page 475)

tional priorities for the world's countries.

Habitat participants representing governmental and other policy and action groups are now left with the task of upgrading human settlements to meet human needs. An important role for people in the sciences and the humanities, working jointly, will be to provide technical aid and clarification of values in order to promote favorable national and international will to deal humanely with habitat problems.

CURTIS L. CARTER

New Publications

A limited number of the following publications is available free of charge from the AAAS Division of Public Sector Programs:

Energy End-Use Regulation: Beginning the Debate, edited by Gretchen Vermilye and William A. Blanpied, AAAS Publication No. 76-R-1. Proceedings of a regional seminar held 14 October 1975 in Minnesota's Twin Cities area. The report explores implications of employing a variety of conceivable schemes for end-use regulation and the efficacy of end-use itself as a major component of a rational energy plan for the Minnesota area.

Transdisciplinary Studies in Science and Values, edited by William A. Blanpied and Betsy Kwako, AAAS Report No. 76-R-5. A collection of papers presented at a AAAS Annual Meeting symposium, January 1976. The reports concern development of a transdisciplinary framework which would permit diverse issues related to science and values to be analyzed in their broad cultural contexts. Papers also focus on problems inherent in transdisciplinary research in the area of science and values.

Case Studies in Regional Energy Planning, edited by William A. Blanpied and Gretchen Vermilye, AAAS Report No. 76-R-6. Papers presented at a AAAS Annual Meeting symposium, summarizing and correlating results of a series of regional seminars that explored the possible dimensions of energy policy planning in diverse regions of the country.

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