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**EXPLANATION OF PREHISTORIC CHANGE**—James N. Hill, Ed.—U of NM Pr, 1977, 356 p., diagrams, \$20. For anthropologists, archaeologists and social scientists concerned with change and its consequences, this is a new synthetic approach to explaining change—whenever and wherever it may occur or may have occurred in the past. Based on a seminar held April 2-8, 1970, sponsored by the School of American Research.

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followed by an encyclopedia of 750 plants giving history, locale, appearance and curative properties of each plant. Illustrated by beautiful line drawings.

**HOMO LOQUENS: Man as a Talking Animal**—Dennis Fry—Cambridge U Pr, 1977, 177 p., diagrams & charts, \$12.95, paper, \$3.95. We learn to speak during the first few years of life without paying the process much attention. Therefore, the whole activity of speech communication is carried on with neither speaker nor listener much aware of the mechanics of the operation. This book for the intelligent layman explains the mechanism of speech, discussing the part played by the brain, tongue, ear and speech difficulties.

**THE HUNTING PEOPLES**—Carleton S. Coon—Penguin, 1977, 459 p., maps & drawings by Aldren A. Watson, paper, \$3.95. Ten thousand years ago all men were hunters; today a scant quarter million hunters remain. This book about hunting peoples living today, originally published in 1971, is now available in paperback.

**MECHANICS AND ENERGETICS OF ANIMAL LOCOMOTION**—R. McN. Alexander and G. Goldspink, Eds.—Chapman and Hall (Halsted Pr), 1977, 346 p., illus., \$37.50. How animals move, how much energy they use, how their muscles work and how they co-ordinate their movements. Animals discussed range from the protozoa to the mammals.

**ORCHID BIOLOGY: Reviews and Perspectives, I**—Joseph Arditti, Ed.—Cornell U Pr, 1977, 310 p., illus., \$29.50. International experts present reviews of information from their fields of specialty about orchids, the largest of plant families.

**PHYSICS AND THE SOUND OF MUSIC**—John S. Rigden—Wiley, 1977, 286 p., diagrams and graphs, paper, \$12.50. Written for those who enjoy music and whose interest and curiosity extends to

the means by which musical sound is produced, propagated and perceived. The subject is interdisciplinary, embracing music, physics, psychology, physiology, neurology and architecture.

**STOPPING THE WORLD**—Martin Schweitzer, foreword by Ansel Adams—Doubleday, 1977, unpaginated, color photographs, paper, \$5.95. A book of beautiful nature photographs with poetic text. "The natural world is neither good nor bad: it is not inherently moral, but just *is*. Rather than being a source of despair, it is cause for joy and awe, staggering in its mystery, design and magic drama."

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## ... Traffic

searchers intensely copied down data.

One major exception to this philosophy of leaving traffic control up to the machines involves the transmission of recorded messages. Since the flow of a large number of vehicles might be changed all at once, say away from the Roppongi area, the center personnel first check with police in the affected district. The actual message, though, is composed by computer from prerecorded words and phrases. All the operator does is push a series of buttons to "write in sound" sentences virtually indistinguishable from those spoken by a voice in a single breath.

At the center, one can also see demonstrated an even more sophisticated communication system than that used by the 330 test vehicles. Although far too expensive for immediate practical use, this system employs millimeter-wave broadcasting to transmit enough information to passing vehicles to permit complete mapping of local roads and to show traffic conditions on each. This map can either be displayed on a small television screen or printed on a strip of paper. Two test vehicles are now equipped with this alternative system.

Onda says that the aim of the traffic control system is to reduce average travel time of vehicles in Tokyo by 10 percent,

which could be accomplished if even 20 percent of drivers adopted the full system. Individual vehicle units now cost a prohibitive \$1,500 or so, but mass produced, he says, they might be available for only \$100. Costs for the city, too, would initially be large—roadside transmitters alone would run about \$30,000 per intersection. But if one compares these costs to those that would be needed to build more highways (where one could find the space!) the advantage of more efficient road use soon becomes evident.

The detailed cost benefit analysis goes like this: Suppose an initial \$86 million construction cost for the full system is depreciated over six years and added to an \$11.6 million annual operating cost. Total annual cost is then figured to be \$24.8 million. But economic gain from saved travel time, saved energy and an expected decrease in traffic accidents is more than nine times larger—\$232 million a year. And compared to the current costs of building roads in Tokyo, the initial investment would be equivalent to building only 4.1 kilometers of new highway!

The outstanding note of caution to this scenario, however, can be best injected by recalling the old joke about a motorist who smashed into the rear end of another car on a freeway. When asked by a policeman why he wasn't driving with the proper

five car lengths between him and the car ahead, he replied, "Because there would have been five other cars filling those spaces."

Onda admits that current estimates of the potential benefits of this system rest on the assumption that the number of vehicle trips remains constant. And he points out that Japan's automobile ownership rate is already nearly saturated, with about one car for every three people. However, any large-scale application of the new system will have to be adopted as only one component of a more comprehensive plan to ease urban congestion.

But Japan's experiment already offers some ideas and technology that may be of interest to other nations. The United States Department of Transportation has reportedly already begun to study the results of the MITI project, and smaller experiments are already being conducted by private companies in America and Europe. As in several other areas where the Japanese lead the world in some field of applied research, their extraordinary efforts have been prompted by problems that have become acute here to an extent not yet seen in the rest of the world. Thus, any system that can speed cars through Tokyo's maze of streets should offer even more promise to cities blessed with more orderly traffic patterns. □