

Paleontology: New pieces for a new puzzle



Puzzle piecers (left to right): F. Clark Howell, Mary Leakey, James M. Hester, Richard Leakey and Clifford J. Jolley with pieces of the puzzle.

NYU

The jigsaw puzzle known as paleontology will, if and when it is ever fitted together, yield a detailed picture of the family tree of the human race. But the job of getting all of the pieces into position is a frustrating one because there is no picture on the side of the puzzle box for the archaeologists to use as a model.

It is possible that the puzzle will never get put together. So it is time, says Clifford J. Jolley of New York University, for the archaeologists to sit back, reevaluate all of the pieces and start the puzzle all over again.

And this is just what was going on this week when 30 of the puzzle workers met in New York and laid their pieces on the table. The conference, the first of its scope in the past 10 years, was sponsored by the National Science Foundation, the Wenner-Gren Foundation and New York University. It included researchers from all of the important African archaeological sites.

It is not likely that the participants in the week-long conference will put the puzzle together or even decide which end is up. They might, however, agree to throw out some of their preconceived ideas about the final picture and look for new ways to rearrange the various pieces of the puzzle.

Work like that of C. Donald Johanson of Case Western Reserve University in Cleveland may force them to. He came to the conference immediately after completing three months of work in Ethiopia. And he brought with him what may turn out to be a whole box of pieces to the puzzle that no one even knew existed. Very little work has been done in Ethiopia, but in a short time Johanson's expedition has come up with a knee joint of an upright hominid and a skull fragment that may be more than three million years old. The eastern lowlands of Ethiopia, he says, could be very rich in fossil evidence and

as important as the other major sites.

Another researcher who is intent on starting the puzzle over again is Richard E. Leakey. After his 1972 expedition on the eastern shore of Lake Rudolf in northern Kenya, he described a skull (almost three million years old) that did not fit into the then-accepted version of human evolution. The size and age of the skull suggested that at least two types of early hominids existed in the same place at the same time (SN: 11/18/72, p. 324). And the summer of 1973 has yielded two more partial skulls that do not fit into the puzzle as it now stands.

After a preliminary examination of the 1973 fossils, Leakey says one of them may be similar to the 1972 find. But the other fits into no preconceived notion. Its size and shape seem to be totally outside the range of others of the same age—three million years.

With this evidence, Leakey has decided that a complete revision is necessary. The 1972 season suggested two contemporary lines of hominid. Leakey, therefore, begins his revision by throwing out the old names (*Homo* and *Australopithecus*). He just calls them "things A and B." And the 1973 finds may represent a thing C. Leakey isn't sure. "Enigmatic," is what he says.

In the past, Leakey has been very careful about rearranging the pieces of the puzzle in public. Now, he seems to be convinced that no progress can be made along the presently accepted lines of thought. The 1973 finds may be enigmatic but Leakey told SCIENCE NEWS that he is going to start saying some things that he feels need saying. He expects to shock some of his colleagues but, he says, it is time to say these things and get some new lines of conversation under way. Leakey's preliminary report on his enigmatic finds has been submitted to NATURE. He expects it to be published in March. □

Blunt talk to solar energy supporters

Solar energy seems such a reasonable alternative to the dirty combustion of limited fossil fuel that an increasing number of businessmen, legislators and citizens are asking why more has not been done to encourage development of this apparently perfect power source.

Some interesting answers to that question emerged last week from meetings in Washington of solar industry representatives, a heterogeneous mix of basement-workshop tinkerers and "Fortune 500" executives. The executives met first, called together for an interim report on a study being conducted by the Arthur D. Little Co., aimed at finding the best way to introduce solar energy to the general marketplace. Among the 67 companies to ante up the \$15,000 admission price were General Electric, Westinghouse, DuPont, leaders of the glass, chemical and aerospace industries and, significantly, 20 Japanese manufacturers.

The meeting was closed to all but paid participants, but SCIENCE NEWS has learned that A. D. Little's message was decidedly bullish. Solar energy, the companies were told, indeed has market potential, but establishing the market will be difficult. Incentives, such as tax write-offs for expensive initial installation, could speed the market, but Little reportedly recommended that quickest public acceptance would come for small, low-temperature devices that can be sold at a relatively low cost. In effect, the sales pitch recommended is, "Here's how I can save you 20 percent on your heating bill for only an \$800 investment," rather than, "For \$5,000 I can heat your house for free for 20 years."

The latter approach has, of course, been popular for some years with the more enthusiastic advocates of solar energy, represented principally by small companies that plan for large-scale operations while existing on solar heaters for swimming pools. At a meeting called to form the Solar Energy Industries Association, a handful of big industry representatives clustered together in the rear seats while a hundred-odd smaller entrepreneurs got an unusually stern lesson in economics and political science from various speakers.

Answering criticism that the government has not provided enough help in developing a solar industry, Gorman C. Smith of the Atomic Energy Commission—which is now in the solar R & D funding business—lectured his audience on what he called "The First Law of Economics: That there is no such thing as a free lunch." Solar

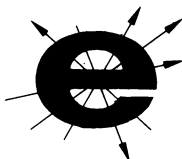
energy is not "free," he said, if installation of the necessary collectors is going to cost a substantial fraction of the price of a house. Competitiveness has to be demonstrated in purely economic terms. Example: Would or would not the cost of installation be better put in a bank to collect interest, from which fuel bills could be paid?

In computing these "real costs" of solar energy, he continued, environmental costs of alternative energy sources should, of course, be included. But, finding new, cleaner ways of burning coal also has to be considered as a high priority for limited R & D funding. Later, in an argument with some outraged solar proponents, he was even more blunt. New R & D funds can only move things just so fast, he said: "You can't produce a baby in a month by getting nine women pregnant!"

Several Congressional aides joined a panel discussion that pointed out the confusion and indecision on the Hill over solar energy. The Congress, it seems, is willing to authorize substantial new funds for solar research, but doesn't know quite where to put them, much less how to assure public acceptance of new technologies that are developed. Various conflicting bills on the matter are now wandering through the House and Senate, with no help from one of the Capitol's most powerful lobbies—the coal and oil interests. One aide warned the solar industrialists, "The more successful you get, the more you're going to be the target of these people."

Only one representative of a major potential buyer was present at the meeting, Frederick D. Hunt of the Mobile Homes Manufacturers Association. Like the speakers before him, Hunt addressed his audience of small businessmen bluntly: "Put up or shut up," he declared, complaining that all his initial efforts to buy a complete working solar heating system for thousands of mobile homes had met with some version of the response, "Just give me a million dollars and five years and I'll develop it for you." Members of his association want to start marketing solar-heated mobile homes within a year, he said, but cannot find any suppliers.

Whether the solar entrepreneurs can successfully move from considering purely scientific problems to the even more complex economic difficulties remains to be seen. But one of the silent, big-industry observers told SCIENCE NEWS that his company expects the small entrepreneurs to become merely component suppliers for the majors. □



Viruses and asthma attacks: A strong link

In recent years scientists have learned a lot more about what precipitates attacks of asthma, an ailment that afflicts nine million Americans. Three years ago Australian investigators followed 12,000 asthmatics and classified their attacks into two categories—those that occur at the same time as respiratory infections (mostly in young children and elderly adults) and those that are caused by allergies (mostly in older children and young adults).

A year ago, Denver investigators studied young children hospitalized for asthma attacks and found that if the attacks were precipitated by respiratory infections, the infectious agents were nearly always viruses, not bacteria.

Now Wisconsin investigators report similar findings relating viral infections and asthma attacks—this time for outpatient asthmatic children—in the Jan. 21 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Theodore E. Minor and his colleagues at the University of Wisconsin Medical School studied 16 out-

patient asthmatic children during 1971 and 1972. All the children's previous attacks had been associated with apparent respiratory infections. The children had 61 asthma attacks during the study, and 42 coincided with apparent respiratory infections. Asthmatic attacks occurred with 38 of 49 severe respiratory infections, but with only 4 of 22 mild respiratory infections. Asthma was precipitated during 21 of 23 severe respiratory infections of viral origin, but in only 1 of 6 severe respiratory infections of bacterial origin. Fourteen of 15 cold infections that resulted in severe respiratory infections and all episodes of Hong Kong Flu were associated with asthma attacks.

On the basis of these and other findings, Minor offers this advice to families with an asthmatic child: Keep him away from brothers or sisters who have a cold or the flu, and try to keep the infected child's hands as germ free as possible. Hands appear to be much better transmitters of colds and flu than talking, sneezing or even kissing.

Is climate influenced by earth's magnetism?

Similarity in the patterns taken by different natural phenomena often leads to scientific suggestions that the phenomena are somehow connected. J. W. King of the Appleton Laboratory in Slough, England, has noted a similarity between patterns of atmospheric pressure and the geomagnetic field near the poles of the earth. He suggests that the geomagnetic field may have an effect on the climate.

The atmospheric pattern is a plot (over the Northern or Southern Hemisphere) of the height at which the pressure is 500 millibars. The plot for the Northern Hemisphere in winter exhibits a kind of dumbbell shape with two low-pressure centers. One is near 80 degrees west longitude and one near 130 degrees east. Both are at about 60 degrees north latitude.

King points out that if one draws a plot of the earth's magnetic field for the same hemisphere showing contour lines of constant magnetic intensity, a similar dumbbell pattern emerges. The magnetic dumbbell is displaced from the atmospheric one by about 25 degrees. (The observations were made at different times so part of the discrepancy can be explained by westward drift of the magnetic field pattern dur-

ing the time between observations.)

A study of the patterns leads King to conclude that the earth's magnetic field possibly influences the average atmospheric pressure in the upper troposphere (about 20,000 feet) and that the average pressure system seems to move westward with the magnetic drift. What connects the two is not certain, but one suggestion is that the solar wind may have something to do with it. The geomagnetic field affects the arrival of solar-wind particles at the upper atmosphere; these particles may in turn have some effect on the pressure.

As the atmospheric pressure moves, the climate changes. King reminds us that in about 1660 the magnetic declination at London and Paris was zero, indicating a different magnetic configuration from what prevails now. At the time the European climate was experiencing a little ice age, which lasted from 1550 to 1700.

King's suggestions appear in the Jan. 18 NATURE. In an editorial in the same issue, NATURE comments: "Meteorologists have been shy—perhaps understandably shy—about suggestions of a linkage, let alone control . . . of the flow of the atmosphere by the magnetic field, that is, ultimately by the flow in the earth's molten core. But both phenomena could be registering parallel responses to some other aspect of the physical environment." □