

etiology and modes of treatment. Among the newer concepts presented was a suggestion that prostaglandins, widely billed as the wonder drugs of the 1970's (SN: 10/10, p. 306), may prove valuable in treating arthritis and a plea that investigators pursue the possibility that the amino acid histidine could become a useful addition to the list of anti-arthritic agents.

Drs. Robert B. Zurier and Gerald Weissmann of the New York University School of Medicine reported that in laboratory experiments they find that prostaglandin  $E_1$  stabilizes the membranes of lysosomes, inhibiting the leakage of enzymes from these intracellular organelles. Previous work has indicated that when lysosomal enzymes escape from lysosomes, they can destroy cartilage and lead to joint destruction.

"Prostaglandin  $E_1$ ," Dr. Zurier observes, "inhibits this leakage, just as steroids do, but it may conceivably be a more effective treatment because it is presumably less toxic." At the same time, he and Dr. Weissmann stressed that their studies so far have involved only cell cultures in the laboratory and that a host of animal and human tests will have to be performed before anyone can validly speculate on the potential therapeutic role of prostaglandins in treating rheumatoid arthritis or other inflammatory diseases.

In another presentation, Dr. Donald A. Gerber of Downstate Medical Center in Brooklyn reported data to support his view that arthritis may be a disease involving a metabolic disorder that can be at least partially relieved by administering histidine to patients.

Histidine, he notes, is the only amino acid found routinely in very low amounts in the serum of individuals with rheumatoid arthritis. During the last three years, Dr. Gerber has conducted clinical trials with 66 persons with advanced rheumatoid arthritis. He administered approximately three grams of histidine daily in capsule form. In all but two of those 66 patients he observed clear improvement, sometimes lasting several months before retreatment was necessary.

Speculating on the mechanism involved, Dr. Gerber explains that histidine, like gold salts, inhibits the denaturation of gamma globulin, an immune globulin considered to be a stimulus to the formation of rheumatoid factor in joint fluid. Thus, he hypothesizes, if histidine levels can be maintained at a sufficiently high concentration to block the breakdown of gamma globulin and its sequelae, arthritis may be controlled. No adverse side effects from histidine have been observed in his studies. But he says he would like to see them repeated by other "less biased" research scientists. □

## The other extreme



*Dr. Tarling's reconstruction of Gondwanaland: One extreme in the range of possible assemblages.*

D. H. Tarling/NATURE

Few scientists now deny that the continents were once joined together in a single giant landmass. The question that occupies them now is how they fit together. Continental reconstructions are generally based on geographical fits and other evidence, such as matching geological features. But the data are incomplete and contradictory, and the issue is far from being settled.

Last year, for instance, two British scientists, Drs. A. Gilbert Smith and Anthony Hallam, published a computer fit of the 500-fathom contour of the southern continents, along with supporting geological evidence (SN: 2/28/70, p. 229).

Now Dr. D. H. Tarling of the University of Newcastle upon Tyne in England, using similar techniques but somewhat different criteria, has arrived at a very different fit. Drs. Smith and Hallam had placed both India and Australia against Antarctica, with the Antarctic Peninsula extending into the gap between the southern tips of Africa and South America. Madagascar and Ceylon were fit into the gap between India and Africa, with Madagascar somewhat north of its present position. In the Jan. 1 NATURE Dr. Tarling rotates Antarctica counterclockwise, so that Australia is closer to India and Africa, and Madagascar is in its present location. Continental edges were placed at the 1,000-fathom contour.

The two reconstructions can best be tested, Dr. Tarling believes, by determining if Madagascar has indeed moved southward.

Though Drs. Smith and Hallam had shown geological evidence for a northern position of Madagascar, all geological studies in the parts of east Africa and Madagascar bordering the Mozambique Channel, Dr. Tarling points out, show that the channel has

been subsiding for the past 300 million years. This, and evidence from elsewhere in the Indian Ocean, leads Dr. Tarling to conclude that the channel was not created by sea-floor spreading during the past 300 million years, and that Madagascar could not have fit into that region during the Mesozoic era, as required by the Smith-Hallam reconstruction.

For the northern continents, Dr. Tarling suggests a slight modification of the generally accepted model proposed by Sir Edward Bullard, moving Europe and Greenland slightly northward relative to North America. This eliminates an overlap between Spain and Morocco and turns the area between northwestern Greenland and Ellesmere Island into a simple transcurrent fault, rather than a compression zone.

In general, the paleomagnetic data, says Dr. Tarling, tend to favor his reconstruction for the Mesozoic and early Tertiary (230 million to 60 million years ago), but are slightly more in agreement with the Smith and Hallam reconstruction for the Paleozoic (600 million to 230 million years ago).

Dr. Tarling also describes how the continental distribution has evolved into its present pattern from his reconstruction.

The Smith and Hallam reconstruction, he concludes, cannot be considered unique from morphological consideration alone, and other fits of Africa, India, Australia and Antarctica are possible.

"The most likely fit for a period some 300 million years ago," he says, "must be tested rigorously using other criteria. Neither of these reconstructions can be considered as the final picture for the period 250 million-300 million years ago, but they seem to represent the two extremes of the possible assemblages." □