EVOLUTION

NATURE RAMBLINGS

by Frank Thone

On Becoming Bipeds

➤ DENUNCIATION in the Soviet newspaper IZVESTIA of Prof. S. D. Antipin, Russian biologist who claims (somewhat paradoxically) that man's downfall began when he got up off all fours and stood erect, is really a tempest in a rather old teapot.

Declarations of this kind have been made from time to time for generations, some of them duplicating Prof. Antipin's points. While most biologists admit that disadvantages have followed the evolution of the two-legged stance, they also point out some very solid offsetting advantages that have been gained thereby.

One altogether too conspicuous effect of man's upright posture has been his loss of the Battle of the Bulge. Our abdominal muscles and ligaments would keep the anatomical equator under much better control if we were still quadrupeds. As it is, half the human population eventually yields to expansionist tendencies. The other half buys girdles.

Again, if we went about with our necks horizontal and our noses pointed downward, we probably would have far less trouble with germ infections that now conveniently drop into our throats and windpipes. At this end of our anatomy, the postural change has benefited mainly the nose-and-throat doctors—many of whom have sinus trouble themselves.

Then there are such things as fallen arches due to bearing all the body weight on two feet, varicose veins produced by back-pressure of blood being pumped up our long legs, backaches brought on by minor dislocations of that stretched-out S-shaped string of bones called the spine, and so on through a whole catalog of ills.

A number of compensating advantages might be pointed out; but greatest of all these was the freeing of the front legs to become arms, and of the forepaws to develop into hands.

First major use of the forelimbs thus liberated from the dull drudgery of crawling on all fours, one may guess, was to pick up things to eat and carry them to the mouth. (That's what babies still use their hands for, mainly—often to their parents' dismay.) With part of its work taken over by the hands, the mouth didn't need to be so big or stick out so far; the retreat of the snout began, and the evolution of the human face was on its way.

The retreat of the snout had three major effects. It caused some recession in the sense of smell, as Prof. Antipin notes; though he probably overstresses this point. On the other hand, it gave the eyes a far better chance than they had ever had in the long history of evolution. In most big-snouted animals the eyes are pushed out to the sides of the head, so that looking straight ahead with both of them at the same time is difficult or impossible. At the same time, upright posture gave a more commanding height from which to look around.

Biggest advantage of all, however, was the new chance to grow gained by the top of the skull, as the lower part declined in importance. This opportunity for brain growth was matched by increasing incentives to do so, as the restlessly exploring hands and the endlessly questing eyes brought millions of new sensations, new impressions, new problems to be solved, new ideas and concepts arising out of their solution. That big hollow knob on the end of a crooked stick, the human brain-pan, simply couldn't have happened to a quadruped. It might almost be said that man owes his brains to his two feet.

The tendency to become biped instead of quadruped is by no means confined to the line of descent that produced man and his nearest relatives, the monkeys and apes. The late Prof. William E. Ritter, one of the founders of Science Service, pointed out that birds are even more highly specialized bipeds than man. Too highly specialized, perhaps, since their use of forelimbs as wings deprives them of the endless diversity of uses that man gets from his arms and hands.

Two-leggedness is in fact a very common tendency among animals, Prof. Ritter further pointed out. It turns up in such diverse and remotely related animal groups as kangaroos and jumping mice, the extinct tyrannosaurs and the still-existing frilled lizards. These, however, make far less use of their forelimbs as arms and hands, which Prof. Ritter ascribed to the fact that they never lived in trees and hence never had to hang onto anything. If our great-great-grandsire really was a monkey on a stick, we owe quite a lot to the stick.

Science News Letter, June 4, 1949

GENERAL SCIENCE

Remove Public Health Name From AEC Building

➤ FROM the stone front of the building occupied by the Atomic Energy Commission, the incorrect label of "United States Public Health Service" has been chiseled off. The new sign, "United States Atomic Energy Commission," will not be carved in the stone but will appear in acrylic plastic letters one foot high, more easily changed than stone carving.

The present AEC building was built for the Public Health Service before the war, occupied by the Joint Chiefs of Staff, reoccupied by the health experts after the war for a short time and then taken over by the atomic staff.

Science News Letter, June 4, 1949