

GENERAL SCIENCE

Bones Make the Walker

Man's bone structure makes him "the perfect walker" and with proper training walking is no problem whether he is short, pudgy, tall or slender, Elizabeth Mirel reports.

► **SHORT AND PUDGY** or tall and slender—physique does not matter, for man's bone structure makes him "the perfect walker," anthropologists agree.

When Marines, officials or athletes join in the 50-mile hike of the present walking vogue, they are demonstrating one of the superiorities that distinguishes man from his fellow animals.

The Marine endurance test was the challenge to the New Frontier that sparked the current hiking craze, affecting everyone from California high school students to Capitol Hill secretaries.

A long time ago man evolved to the point where he could walk long distances "without any trouble," Dr. T. Dale Stewart, head curator of the National Museum in Washington, told *SCIENCE SERVICE*. Now, it is all "just a matter of fitness," he said.

Of course, in a contest, a heavy person might not do as well as one with an "athletic" build, but his skeletal equipment is no different from anybody else's. With proper training, anyone could do the walking, Dr. Stewart said.

Man's bone structure equips him for this

earthly life, but long legs do help when you are walking, Prof. William W. Howells of Harvard University commented.

Physical anthropologists have shown that the legs and feet of human beings are very highly developed and specialized. Man's legs are quite long in proportion to the rest of the body. They take up the greatest percentage of body weight of any mammal, except for the kangaroo.

A man's foot has a longer heel and a less movable big toe than that of apes or other animals in the primate category. The bones of the foot are put together in a compact arrangement. Weight can be shifted from the ankles to the toes and the ball of the foot, making it possible for man to take long, easy strides.

Despite the noble efforts of the Marines, the Russians still hold the world's record for long distance walking.

The fastest elapsed time for the Marine officers' 50-mile walk was set by First Lt. Donald L. Bernath at 11 hours and 40 minutes.

PSYCHOLOGY

Peace Research Neglected

► **THE ARMS CONTROL** and Disarmament Agency has concentrated too much of its research on military matters.

"It has neglected basic research into motivations, the reduction of tensions and the causes of war," Congressman Robert W. Kastenmeier (D-Wis.) told *SCIENCE SERVICE*.

Rep. Kastenmeier, key figure in forming the agency, urged more work to create "a favorable climate for negotiations and for peace."

Officials of the Arms Control and Disarmament Agency (ACDA) agree that "little has been done so far" in the area of psychological and political studies.

Outside of the Government, the story is different.

Throughout the country psychologists are doing research trying to answer such questions as:

1. Why does one person (or one country) believe another is hostile?
2. Can the study of the meanings of words (semantics) prevent misunderstandings?
3. How can a climate of trust among nations be established?
4. What can the acting out of past international situations contribute to our understanding of present circumstances?

Many studies patterned after the disarmament situation have been completed.

Students at Dartmouth College used poker chips as nuclear weapons in an experiment.

In 1958 a Russian, S. Lobastov, set the world's record of 4 hours, 16 minutes and 8.6 seconds for the 50,000 meter (31.05 miles) walk. His pace was a sprightly 7.2 miles per hour average. This is way ahead of the New Frontier time, set by Attorney General Robert F. Kennedy, of 17 hours, 50 minutes, or an average of 2.8 miles per hour for 50 miles. Lobastov outstrides our Marine whose average pace was 4.3 miles per hour.

Yet we need not despair, for our faithful allies, the British, hold the 50,000 meter record for the Olympic Games. In 1960 Donald Thompson walked it in 4 hours, 25 minutes and 30 seconds.

Fifty thousand meters is the longest distance walk for which world and Olympic records are kept.

The peculiar, waltz-like appearance of race walkers comes from using special techniques that have to be learned and practiced. The rules are that unbroken contact with the ground must be maintained. This means that the front foot must touch the ground before the back one can be lifted. During the period of each step, the leg has to be straight for at least one moment.

Man's erect posture is one of the factors that allowed him to develop a culture. His hands were freed for tool-making and other skillful operations.

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Pratt Institute

FLOATING STRUCTURES—Kenneth Snelson, New York designer, with one of his new architectural structures to be exhibited at Pratt Institute, Brooklyn, N. Y. It consists of floating aluminum sections suspended in a network of steel wires.

Ten out of 12 pairs of students ended up in an arms race. Disarmament by one side was often met with suspicion by the other.

Boys in a camp were made into enemy societies by Prof. Muzafer Sherif and his associates. They discovered that the only way the conflict of the groups could be settled was through cooperation on a problem—restoring the water supply to the camp—that neither group could have solved alone.

Such studies are concerned with psychological and political factors. These are the "most important variables," Prof. Charles E. Osgood, director of the Institute of Communications Research at the University of Illinois and president of the American Psychological Association, said.

All this research not connected with the Arms Control and Disarmament Agency contrasts with the projects under agency contracts. The most recent example is a contract awarded to the Aerospace Corp., El Segundo, Calif., on Feb. 6, 1963. It calls for study of ballistic missiles and military space system developments as they relate to arms control and disarmament measures.

Other examples of ACDA contracts are studies concerning the stability of the military environment, and verification arrangements relating to certain arms control and disarmament measures.

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