To Attack Wilderness

Especially was the method feasible only in fairly well-populated regions of the earth where the chances of finding the balloon, after its descent, were reasonable. The use of the method in the regions near the magnetic poles of the earth—in far northwestern Canada and in the Antarctic—was impractical and yet those regions hold some of the most pertinent secrets of high altitude cosmic rays research.

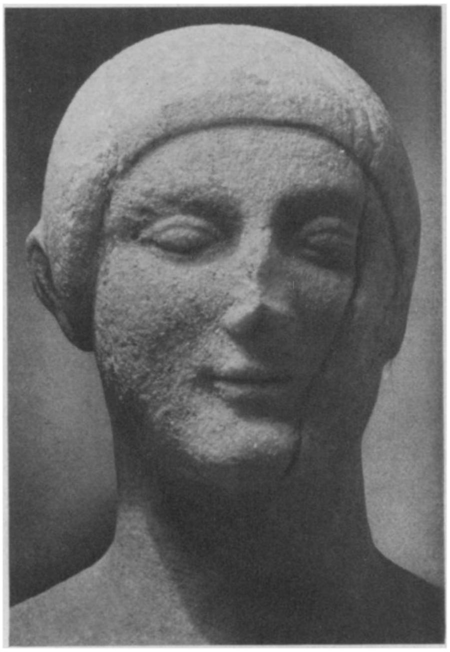
Trying to learn sufficient facts about cosmic rays to build a really complete theory of their origin is handicapped because the observation must be made on an earth which is, in part, guarded from the rays. Not only does the air itself stop some of the cosmic rays and decrease their energy in an amount equal to a foot of lead, but, more important, the magnetic field of the earth bends the electrical particles in the rays and in some cases prevents them from reaching the surface of the earth at all.

Near the magnetic equator, for example, only the most piercing high-energy rays of all can get through to the instruments of scientists. Farther north and south from the equator more and more of the so-called "softer" or weaker rays can be observed. And at the magnetic poles of the earth very weak rays should be observed at not-too-great altitudes.

Thus the hope of scientists to study cosmic rays near the magnetic poles is like a man who seeks to pierce the weakest point in the "armor" which guards the earth. The magnetic pole regions are the Achilles' heel areas in cosmic ray study.

But no one is going to transport large $185,000 balloons far north into Canada where the chance of landing successfully and without injury to human pilots or apparatus is extremely minute. Robot radio balloons appear to be the only way out.

Science News Letter, July 4, 1936



SAVED BY DEFECT

This early Greek sculpture, which paradoxically survived 2400 years because it was thrown away, has come to adorn the Boston Museum of Fine Arts. Finding his marble imperfect, the Greek sculptor apparently abandoned the head unfinished; and in its obscurity the head escaped serious ravages of war and time.

CONSERVATION

Sciences Put Heads Together Over Flood Control Problems

FLOOD control problems motivated a three-cornered scientific get-together at the summer meeting of the Ecological Society of America, at Rochester, N. Y., where three lines of scientific activity—forestry, soil conservation, and engineering—pooled ideas and suggested ways and means for combating the national menace of great waters broken loose.

Participants in the symposium were Ferdinand Silcox, chief of the U. S. Forest Service, Dr. W. C. Lowdermilk, associate chief of the Soil Conservation Service, and Dr. Morris L. Cooke, head of the Rural Electrification Administration.

"Eyes unto the Hills"

The speakers were unanimous in the opinion that flood problems in the great stream valleys can not be met wholly on the spot, but that the ultimate effective efforts must be put forth far upstream, where the "little waters" are.

To achieve flood control, said Mr. Silcox, we must "lift up our eyes unto the hills;" in them lies the danger, and from them must come the help. For there our little waters rise; there man may restore and protect that vegetative cover which forms nature's own great reservoirs and settling basins, dams, revetments, and levees.

And there, he pointed out, are the National Forests. Flanking the Appalachians from New Hampshire to Georgia; abutting the Great Lakes and dotting headwaters of the Mississippi; blanketing the Rockies from Canada to Mexico, the Cascade, Sierra, and Coast Range mountains from north to south; they offer an opportunity and a challenge to ecologists, foresters, and engineers alike. Maintenance of their forest, forage, and other vegetative cover is vital to flood control.

Foresters believe that if each drop of water is held for a time in the soil where it falls, there will be lesser volumes of water than now pile up in lower reaches of our rivers; that man's mighty engineering works alone can not wholly prevent death from stalking through the lowlands; that to do this, conditions which serve to hold back rains at the headwaters must be restored, improved and maintained. Flood control must start, not with raging torrents of the lower Mississippi, but with raindrops and rivulets in places far from the haunts of man.

Lessons from Raindrops

From single falling raindrops man can learn the beginnings of wisdom regarding soil conservation, Dr. Lowdermilk told his audience. When a drop falls, it splashes into a spray of clear water if it strikes a leaf or grassblade or anything else than bare, unprotected earth. The spray settles upon the soil and is absorbed, with little or no surface runoff.

But if the drop falls on bare earth, it splashes up not clean but muddy. The fine particles in the muddy spray, as it falls back to earth, "filter out at the surface to form a thin film which chokes up the surface pores of the soil. Only a part of the drop goes into the soil, another part flows over the surface, and by the accumulation of infinite drops, superficial flow is formed. As streamlets enlarge, the waters are released from surface frictional forces; the velocity of flow rapidly accelerates and generates erosive power. The rampant waters become gully-washers, to coalesce into raging torrential flows."

Another thing that prevents the soil from absorbing its proper quota of water is the presence of imprisoned air. In the aggregate these air bubbles im-