

GENERAL SCIENCE

Loyalty Order Harmful

Brilliant scientific minds will be denied to the furtherance of research in atomic energy under present security clearance procedures, AAAS warns.

➤ A WARNING that atomic energy development "will be shunned by men of ability and pride" if present trends in security clearance of scientists continue was sounded by a special committee of the nation's largest general science organization, the American Association for the Advancement of Science.

Conclusions of the AAAS's special committee on civil liberties for scientists, which include an attack on the loyalty order for federal employees, were published in the Association's journal, *SCIENCE* (Aug. 19). The full, 77-page report of the six-man committee is still undergoing revision prior to publication, it was announced.

Three main conclusions of the report are:

1. "Secrecy is damaging to both science and democracy."

2. "If nothing is done to reverse the present trend to require security clearance of scientists who do not have or desire to have access to restricted data, it is likely that many of the most penetrating and original scientific minds will be turned to pursuits unrelated to further development of the atomic energy program.

"Work in that field will be shunned by men of ability and pride if they are constantly treated as objects of suspicion and possible calumny."

3. "Until the loyalty order deals with the way employees act rather than with the way they supposedly think, we shall inhibit the freedom and encourage the insecurity of our public servants."

The committee was formed in Dec. 1947, with Dr. Maurice B. Visscher, University of Minnesota physiologist, as chairman. At present, Dr. Visscher and Dr. E. C. Stakman, University of Minnesota plant pathologist and president of the Association, are working on revision of the full report, the journal stated.

Members of the committee are: Dr. Philip Bard, physiologist of the Johns Hopkins University; Dr. Robert E. Cushman, Cornell University political scientist; Dr. Richard L. Meier, an American scientist now working in an English research laboratory; and James R. Newman, a Washington lawyer and author who is a contributing editor of *New Republic* magazine. Walter Gellhorn of the Columbia University Law School served as consultant to the committee.

Military clearance procedures for civilian scientists are attacked by the report on grounds that military men determine

whether or not clearance is granted, and the only appeal for the civilian scientist not cleared is to another military body, the Industrial Employment Review Board.

"Such subjection of the destinies of civilians to military tribunals is contrary to national tradition," the report asserts.

The U. S. Atomic Energy Commission is accused by the committee of "excessive precautions" which, it finds, "discourage participation in important research activities closely linked to the nation's well-being."

There is, the report suggests, a tendency to require security clearance of scientists who will not be dealing with classified, or restricted data, except through personal contact with other scientists. Only one-tenth of the scientists at the Brookhaven National Laboratory of the AEC on Long Island work with secret material, the committee estimates, but all scientists at the laboratory must be cleared before they can work there.

"This apparently reflects a yielding to uninformed or sensationalist legislators and others who tend to exaggerate the

problem of 'keeping our atomic secrets,'" the report contends.

The report says that the problem of "faithless scientific personnel in this country appears to be markedly less grave than the public has been led to suppose." And, it is added, it's harder to give away a scientific secret than most people realize.

Fewer scientists need to be given security clearance, the committee urges.

The President's loyalty order needs "a drastic revision," the AAAS group charges.

Arguing that present laws already protect the government from employees who advocate its overthrow, the report contends that the order is "superfluous."

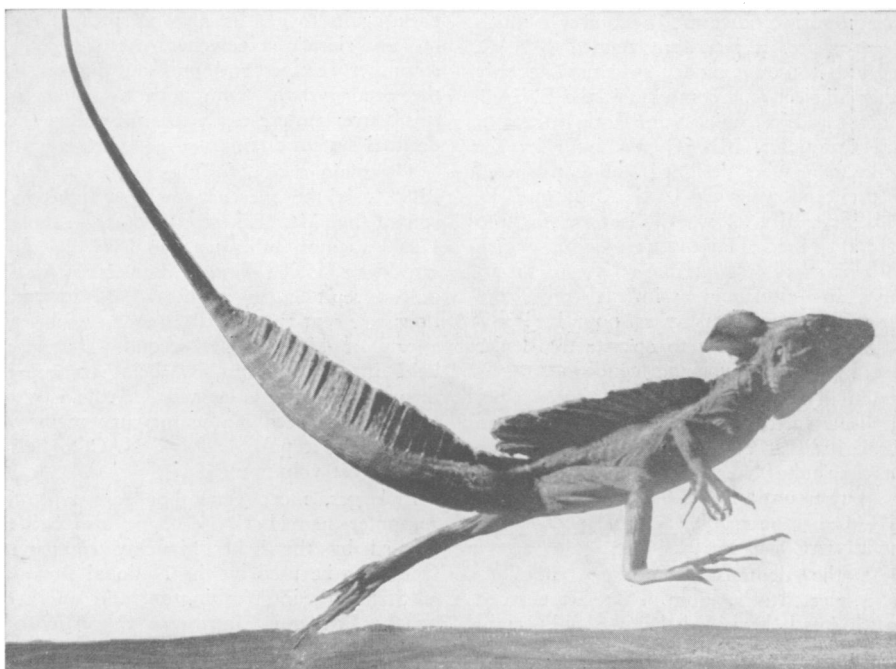
"The cost (of continuing the loyalty order) will in the end be borne not by the employees who are deprived of their normal freedom to believe and behave as they wish within the limits law has set. It will be borne by the nation as a whole," the committee concludes.

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ZOOLOGY

Tail of a Running Lizard Serves as a Balance

➤ BASILISKS, which are large lizards from the American tropics, rise up and run on their two hind legs when they are in a real hurry. There is a temptation to describe the basilisk as the lizard that runs like a man; but this would not be quite accurate. There are some rather wide differences in the two modes of bipedal movement, Dr. Richard C. Snyder, now of the



HIGH-TAILING LIZARD—Running basilisk lizard springs clear of the ground as it hits the top of its stride, upflung tail balancing forward-thrust body.

University of Washington, discovered when he analyzed high-speed motion pictures taken for him by Dr. A. A. Allen of Cornell University.

A running man swings his legs straight back and forth, but the running basilisk flings his legs out sidewise in a wide arc, more like some of the fancy steps seen in a ballet or in figure-skating, Dr. Allen found. This relatively less efficient type of motion, apparently dictated by the lizard's anatomical structure, makes its high speed all the more remarkable—for the basilisk moves like the proverbial blue streak when it feels the urge for speed.

When it is walking at leisure the basilisk goes on all fours, using its shorter and comparatively feeble forelegs. Sometimes it squats, kangaroo-fashion, on its hindlegs and long tail. But on a split second's notice it can break from a dead standing start into its lightning-like two-legged run.

ENGINEERING

New "Electronic Brain"

► FINAL wraps were removed by the Eckert-Mauchly Corporation from what is said to be the world's second all-electronic automatic computing machine. The new device is smaller in size in comparison with its 30-ton parent, but faster in operation. Its speed and accuracy, 12,000 times faster than a human being, was demonstrated in Philadelphia to a group of scientists and representatives of the press.

The new calculator stands five feet high, four feet long and one foot wide. With its accessories, however, it requires a much larger space. It has been named BINAC, because it uses a binary system. The only other all-electronic computer is the ENIAC, short for Electronic Numerical Integrator and Computer. BINAC was built by the same men who designed and constructed its predecessor for the U. S. Army in 1946. This first BINAC was built for Northrop Aircraft, Inc., Hawthorne, Calif., which will be the first private concern to acquire an "electronic brain." A crew from the California company is now in Philadelphia to learn how to operate the device and keep it in working condition.

Actually twin computers, BINAC has duplicate arithmetic channels so it can check itself at every step. It has also two mercury tube "memories." These hold electric pulses until needed. Each twin of the BINAC has only 700 vacuum tubes, while the ENIAC has 18,000.

At the demonstration there, numbers were selected at random. These were typed on a small keyboard having only eight keys. The BINAC used coded instructions from a magnetic tape to deal with these numbers. Square and cube roots are calculated by it in a fraction of a second.

A human being with pad and pencil can find a square root correct for eight or nine

When it reaches top speed, it is clear of the ground for a short part of each stride, thrusting itself into the air with the final push of its toes and catching its weight on the partly flexed opposite hindleg as it comes down.

The basilisk's long, heavy tail is an important organ in its running, Dr. Snyder discovered. Normally, as it picks up speed, it lifts its tail high, balancing its forward-thrust body.

The balancing function of the tail was strikingly demonstrated when a third of its length was surgically removed from one of the animals. The luckless lizard tried to break into its normal two-legged run, but after only one or two strides had to flop forward. When two-thirds of the tail was removed the performance was even poorer. A full-length tail therefore seems indispensable to the running basilisk.

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of International Business Machines Corp., and the Bell Telephone Laboratories relay computer, might be mentioned. There are now other all-electronic computers under development, particularly at Harvard, Massachusetts Institute of Technology, Princeton and the University of Pennsylvania. First place, however, is claimed for ENIAC and BINAC.

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ENGINEERING

"Daily Diary in Dust" Written by New Device

► A SIMPLE device developed at the atomic energy project on the Los Angeles campus of the University of California writes a "daily diary in dust."

The instrument is used to determine air-borne contaminants and to what extent air in a given area is contaminated. Based on a continuous jet impaction method, it utilizes a jet tapering to a fine slit, through which air samples are drawn. Particles in the air sample are deposited on a revolving glass disk. The disk can be calibrated to collect samples continuously over any desired period of minutes, hours or even up to a week.

The device is so sensitive that it will collect ash deposits from burning buildings within a five-mile radius, detect evidence of personnel in the area from the slight amount of dust stirred up, note meteorological changes and record many other events which agitate particles in the air.

All these occurrences are so precisely recorded that the time they happened can be accurately determined from the deposits on the disk.

Dr. Benedict Cassen, Dr. F. A. Bryan, Leonard Baumash and Lawrence Curtis of the U.C.L.A. medical school atomic energy project developed the new device.

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GENERAL SCIENCE

UNESCO To Promote World Exchange of Publications

► INTERNATIONAL exchange of publications will be aided by the publication in Paris this year of a manual on the subject, prepared by the United Nations Educational, Scientific and Cultural Organization.

Included will be a list of institutions throughout the world which are willing to exchange publications, and UNESCO officials are appealing to all institutions for information which can be used in the list. The institutions will include libraries, universities, scientific institutions and learned societies.

Information on institutions and publications available for international exchange is desired by the UNESCO Clearing House for Publications in Paris.

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