

likely to spread among the general population. The water-borne epidemic, however, not only shows the possibility of the disease spreading through water but emphasizes again the health dangers of faulty plumbing.

Faulty plumbing was part of the combination of circumstances that led to the outbreak, which occurred on the campus of Michigan State College. The epidemic was limited to persons who had been in the bacteriology building, where the undulant fever germ was being studied. Only a few of the patients, however, had handled the germs. These got into the building's water supply from the dishes and test tubes used in growing and studying them.

Ordinarily dishes in which germs are grown are sterilized before being washed. This procedure was followed but the sterilization was inadequate. On top of this, the plumbing was such that the water in which the contaminated dishes were washed could be siphoned back into the water supplied to other parts of the building.

Science News Letter, July 15, 1939

GENERAL SCIENCE

German Science Decline Reported in AASW Survey

WHAT IS happening to German science under impact of National Socialism is reported in a documented report prepared by the American Association of Scientific Workers' Boston-Cambridge Branch. Upon such findings this young but active organization has recommended a boycott of German scientific materials as a means of combating Nazi ideology.

German universities have lost over half their students in the last five years. The 116,154 students of 1932-33 have decreased to 53,753 in 1937-38, which is 53.7% loss, with greater percentage losses in engineering and the natural sciences.

University teaching staffs dropped 15.8% net in size in four years under Hitler, and it seems likely that about 1500 scientific workers in universities were deprived of their positions for political reasons. The University of Vienna in one year of German occupation lost 48.1% of its teaching staff as contrasted with 6% the preceding year.

"The German universities and research institutes have been so reorganized that they appear to be no longer so well adapted for the training of new investigators and for the promotion of current research," the report declares.

Wide-spread opinion among American

scientists, checked by surveys of actual work produced, provide inductive evidence of a decline in German scientific output. Research as measured by pages published in German chemical, biochemical and physiological journals has fallen off 50% or more, while English and American journals either show no change or an increase. There has been a relative increase in foreign contributors to certain journals, so German contributions are less than page counts indicate.

With a few exceptions made for men of outstanding reputation, teaching and

development of theoretical physics have been for all practical purposes forbidden, the report declares. Physics and mathematics journals have lost quality, and in the case of the international abstracting journal *Zentralblatt für Mathematik*, political interference has caused resignations of its American and many other foreign editors. The two leading German sociological journals are now published in Paris and New York, and the famous philosophical journal *Logos* has become a propaganda instrument.

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GEOLOGY

Hollow Bullets Fired Down Take Oil Well Samples

See Front Cover

HOLLOW "bullets" fired deep underground from special 18-shot well guns are the newest feat of petroleum geologists to get exact information on the location of salt domes, oil-bearing sands and other formations which mark valuable oil resources.

The hollow bullets are fired into the side walls of drill holes and take samples which give final answers to information obtained by electrical prospecting.

The oil well "gun" stands higher than a man and has a diameter sufficient to permit it to enter a 5-inch bore hole. It is pictured on the front cover of this week's *SCIENCE NEWS LETTER*. Along its length are three sets of six "bullets" each. Any one of the 18 can be fired electrically from the surface of the ground.

When electrical prospecting indicates interesting variations in electrical resistance which may mark a transition from water-sand to oil bearing sand at say 6,900 feet, it is only necessary to lower the sample gun to that depth and quickly obtain a specimen of the geological formations at that point.

Core sampling, state E. G. Leonarson and D. C. McCann in a report to the American Institute of Mining and Metallurgical Engineers, can obtain similar information but taking continuous core samples is a costly procedure not always economical in well drilling.

The new method, state the experts of the Schlumberger Well Surveying Corp., permits rapid cheap drilling with the ability at any later date to go back and obtain samples at any given point beneath the surface.

The bullets in the sampling gun are fired by powder and project an empty metal cylinder into the side of the well to a depth of several inches. Because the cylinder is open at both ends it passes through the meaningless mud which may line the sides of the drill holes and enters the true geologic structures. Strong wires attached to the "bullets" pull them out. To prevent loss of the whole gun by breakage of its cable the wires for each bullet have a lower strength than has the cable. If a bullet becomes stuck its wires break off before the cable does.

About 70 per cent. return on samples is obtained, the experts report.

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ENTOMOLOGY

Fly Makes Mosquito Carry Its Eggs to Human Victims

MOSQUITOES have long stood convicted of the crimes of transmitting malaria, yellow fever and other diseases by their bites. That is a relatively simple and easily understood process. A much more complicated job, in which the real villain is a tropical botfly and the mosquito is a bullied and helpless accomplice, is described in the magazine *Natural History* by Dr. C. H. Curran, associate curator of insects at the American Museum of Natural History.

Botflies are insects that lay their eggs on the skin of animals. The emerging larvae burrow into the tissues, where they live as parasites, causing more or less discomfort and pain, until they are ready to emerge as adults.

This particular botfly, however, never visits its victims, which include monkeys and other mammals as well as human