

GEOLOGY

English Channel Is Recent Act of Nature

THE English Channel, which has thus far kept German invaders out of Britain, is so recent a body of water geologically that it may have been formed only 5,000 years ago, says Prof. Edward Steidle, dean of Pennsylvania State College's school of mineral industries.

"Even now, an elevation of only 120 feet would unite England and the continent again," he explains.

The channel which provides England with a valuable moat for defense was formed near the end of the last great ice age in Europe. Melting ice and retreat of the ice sheet caused sea level to rise, forming the North Sea, Baltic Sea, and the channel which cut England from France.

Science News Letter, October 4, 1941

MILITARY SCIENCE

Soviet Children Taught War Living At School

SCHOOL CHILDREN in Soviet Russia this autumn are being taught in classrooms a grim and practical science of how to stay alive in war.

German invasion made it necessary for educators in Soviet Republics to do quick conferring and plan a new program, putting vital education first, according to a report received by Soviet representatives in this country.

Since children may be lost from families or teachers in sudden attack or evacuation, Soviet pupils are all being taught to read maps and use compasses. Every pupil is required also to learn to draw plans and take measurements—important if Soviet troops need directions about Nazi troops in a village, or other local geographic information.

Basic courses in Russian schools this term teach children war's applied chemistry of how to fight poison gas, how to extinguish incendiary bombs and what they should know about war explosives.

Older pupils are getting simple lessons in using telegraphic and optical instruments for communication emergencies. They are taught elementary facts about ballistics and diesel motors, and lessons about terrain, in case they are needed to fill some vital task quickly.

For morale building, Soviet educators are having teachers stress exploits of old Russian heroes and Soviet achievements in science, literature and art.

Physical training and military instruction for boys has been broadened to in-

clude swimming rivers, throwing hand grenades, and using fire-arms and bayonets.

The U.S.S.R. had expected 36,000,000 children to enroll in elementary and secondary schools, but the German advances have admittedly disrupted schooling in some areas.

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ENGINEERING

Glass Without Glare Prepared Electrically

See Front Cover

GLASS without glare is prepared by coating the surface with a film of magnesium fluoride 1/300,000th part of an inch thick. The process must be carried out in a vacuum where a tiny bit of the fluoride is electrically evaporated. Hence the great globe shown on the front cover of this week's SCIENCE NEWS LETTER, a form adapted to resist the enormous atmosphere on the outside!

In the photograph C. W. Moore is putting the glass surfaces to be treated into the sphere where alnico magnets hold the metal frames in which the glass has been placed.

The process was developed by Dr. C. W. Hewlett of the General Electric Company's research laboratory.

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PSYCHOLOGY

Right Ear Doesn't Hear What the Left Ear Does

YOUR right ear doesn't hear what your left ear does, Dr. S. S. Stevens and J. P. Egan of Harvard University have found.

Although it is only in defective ears that this "double hearing" is dramatic, persons with "normal" hearing perceive the pitch of the same tone as higher in one ear than in the other.

This was discovered when seven people listened individually in an apparatus which delivered separate tones to their two ears. The individual could listen first with one ear and then with the other and adjust the pitch of one tone until they matched.

The amount one tone had to be altered in pitch so that it would sound the same as that heard by the other ear was sometimes as much as two and a half per cent.

The difference in perception of the two ears was generally greater at low intensities than for loud sounds.

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IN SCIENCE

PHYSICS

Coast and Geodetic Survey Recorded Magnetic Storm

RECENTLY installed instruments of the U. S. Coast and Geodetic Survey geomagnetic laboratory at Cheltenham, Md., were able to make a complete record of the great magnetic storm that interrupted wire and radio communication before and during the magnificent auroral display of Sept. 18. They were able to do this, Capt. N. H. Heck of the Survey explained, because they are insensitive, so that their indicators did not swing completely off the scale, as would have been the case with older, more sensitive instruments.

Ranges in magnetic intensity of 2540 gammas (geomagnetic units) in the horizontal direction, and of 1390 gammas vertically, were recorded. The ordinary magnetic storm records a range of only 300 or 400 gammas.

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PSYCHOLOGY

Monkeys Trained to Sort by Color When Shade Differs

MONKEYS don't ordinarily go shopping, but they can be taught to match samples by colors, psychologists at the meeting of the American Psychological Association learned from a report by Dr. Benjamin Weinstein, of the University of Wisconsin.

Not only did Dr. Weinstein succeed in teaching his monkeys to pick out from a group of objects the particular one that matched the color of his sample, he was also able to train them to select from an array of objects all the reds or all the blues regardless of how deep or how light the tint was.

This experiment gains importance from the present emergency. During the first World War, it was found that wounded soldiers with brain injuries were often unable to do what these monkeys have learned to do. Dr. Weinstein hopes through study of his animals to discover facts that may be of value in treating the wounded of this war.

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CE FIELDS

WILDLIFE

Trumpeter Swans Show Some Increase in Numbers

TRUMPETER SWANS, which for years have just barely escaped joining the passenger pigeon and the heath hen in the ranks of extinct species, are holding their own, and even showing a slight increase, joint studies by biologists of the U. S. National Park Service and the U. S. Fish and Wildlife Service indicate.

This year's count of all specimens that could be located shows a total of 211 birds, as compared with 190 in the 1940 census. The two centers of trumpeter swan population are in Yellowstone National Park and the Red Rock Lakes National Wildlife Refuge in Montana. The latter place is under the jurisdiction of the Fish and Wildlife Service.

The species no longer undertakes long migration flights, but shifts between these two centers. During the current year young birds were observed for the first time on Hegben Lake in Montana, which lies between the two sanctuaries, indicating nesting at that site.

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PHYSIOLOGY

Alcohol Reduces Ability Of Body to React

ALCOHOL reduces the ability of the body to respond with an alarm reaction when large areas of the skin are exposed to heat, the National Academy of Sciences learned from a report by Dr. J. D. Hardy, of the Russell Sage Institute of Pathology, Cornell University Medical College, and Drs. H. Goodell and H. G. Wolff, of New York Hospital and Cornell.

Although different people are equally sensitive to pain, these scientists have found a wide variation in the way they respond to hurt.

An easily measured alarm reaction of the body is a change which occurs in the electrical resistance of the skin. The amount of heat shining through a condensing lens onto the forehead necessary to produce a barely perceptible change in skin resistance was measured by these investigators.

Not only is it different in different individuals, but it is different with large areas of the skin than with small, they found. When an area of 30 square centimeters of skin is exposed to the heat, the intensity necessary to change the skin resistance is only eight hundredths of the amount necessary to produce pain. And this required amount is variable—both from person to person and from time to time in the same individual. In a skin area smaller than three square centimeters, however, the threshold of reaction was not so variable and was about the same as the amount necessary to produce pain.

When large areas of the skin are exposed to heat, the body shows an alertness or alarm reaction in response to a strong sensation of heat and warmth. But when the area is small, such a reaction is only to pain, the investigators conclude.

Drugs change this ability of the body to respond to heat. When acetylsalicylic acid was given to the subject, he did not respond until the heat over a large area was sufficient to produce pain. When alcohol was given, even more heat was endured without response.

Science News Letter, October 4, 1941

FORESTRY

Trees Reached New England Via Route Now Submerged

IMMIGRANT OAK and beech trees long ago pushed their way up the Atlantic coast to New England and southeast Canada over a migration route now lost under water, it appears from evidence which a contractor at Brooklyn Navy Yard has turned over to plant scientists.

The evidence, consisting of peat samples taken from 40 and 60 feet below the surface, contains pollen in which oak and beech predominate, says Dr. Paul B. Sears of Oberlin College, who has studied the pollen content.

"This indicates quite clearly that at the time the peat was formed, deciduous forest conditions prevailed on the then exposed but now submerged surface, presumably affording an opportunity for the northward migration of plants appropriate to deciduous forest conditions," he reports. (*Science*, Sept. 26.)

Botanists and others have been interested, Dr. Sears explains, in the presence of southern plants in southeast Canada and New England, possibility of such a migration path has been speculated.

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PHYSIOLOGY

Raw Egg Less Digestible Than When Hard Boiled

SWALLOWING raw eggs, with the idea of getting some easily digestible protein, is all a mistake, Dr. Donald D. Van Slyke, of the Rockefeller Institute for Medical Research, told the meeting of the American Association for the Advancement of Science. If you really want to make egg white digestible, he said, boil it hard, then rub it into fine particles through a sieve.

Dr. Van Slyke's address had to do with the physiology of the amino acids, which are the units or building-blocks of which proteins are composed. There are 21 amino acids which the human body must have. Ten it can manufacture itself out of other materials if they are not supplied from outside sources. The other eleven cannot be synthesized within the body; they must come ready made, or we starve.

Special effects of various amino acids have been studied on animals. Some of them have special actions, in neutralizing certain definite poisons.

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PLANT PHYSIOLOGY

Tip Buds Poison Others With Growth-Checking Stuff

BUDS on the tips of plant branches literally poison their younger brothers to maintain their position of dominance. They secrete a growth-checking substance which prevents the development of lateral buds, or at most permits them only limited growth, explained Dr. John W. Mitchell of the U. S. Department of Agriculture to the American Association for the Advancement of Science.

It has long been known that plant stems continue their growth because the bud at the end has this dominance over other buds. It has also been known that if the terminal bud is removed, other buds farther down begin to develop, sometimes with a new establishment of dominance by one of the awakened lateral buds. But there has been no agreement among botanists regarding the mechanism underlying this phenomenon.

Lately, however, it has been demonstrated that substances extracted from certain parts of plants inhibited growth when applied to the buds of a normal plant. Synthetic growth-regulating substances have also been prepared which have similar effects.

Science News Letter, October 4, 1941