

EDUCATION

Students Fake Accuracy When Given Impossible Task

EDUCATORS who deplore the present emphasis on examinations in scientific courses of American universities are merely strengthening the delusion of youth that it should be possible to get an education without paying the price in hard work, according to Prof. Hosmer W. Stone of the University of California at Los Angeles.

Prof. Stone reported to the American Chemical Society on tests which he has made to determine how many students in elementary chemistry actually think about what they are doing.

In commenting on this paper he intimated that it is human nature to expend as little effort as possible in accomplishing a given task even if it is necessary to be a little dishonest.

In support of this opinion he cited his experiences with an ordinarily respectable group of chemistry students when faced by a problem of air analysis which could not be solved satisfactorily even by experts.

Just to see what they would do he set a practically impossible limit of error within which their solutions must fall in order to receive a passing grade.

Ninety-six per cent. of the students reported the impossible to get a passing grade. Later, when the same problem was presented under closer supervision only four students turned in passable results.

Prof. Stone added that many instructors who feel that they have raised scientific standards by demanding accuracy of a high order are doing so only at the expense of scientific integrity among students.

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ECOLOGY

Birds, Squirrels Credited With Planting of Forests

BIRNAM Wood came to Dunsinane Hill, because Macduff's army carried it—or a considerable part of it—as camouflage. And that was the end of Macbeth, as everybody remembers.

But creatures considerably less husky than medieval Scottish soldiers still carry forests. Birds, squirrels and other small animals are important agents in reforestation, through their endless activities in carrying acorns and nuts, Dr. Joseph Grinnell, zoologist of the University of California, reminded his hearers in the course of an address given under the auspices of Science Service.

The birds and little animals carry the acorns only as prospective food, of course. But they drop some of them, and of the endless millions of them they bury or hide in crevices, there are hundreds of thousands they forget all about, and these subsequently get a chance to sprout and grow into trees.

Dr. Grinnell related one dramatic example of his own observation. He was up in the California foothills, among the oak woods when the acorns were dropping. It struck him, that all the acorns these trees bore must inevitably roll downhill; there was no way for them to roll up. That would be expected to result eventually in the migration of the forest down the slopes.

But then a bluejay flew uphill past him, carrying an acorn in its beak. Another jay passed, and another, and another. Jays flying uphill all carried acorns. Jays flying downhill carried none. Here was the means by which the California oak forest climbed its particular Dunsinane Hill.

Dr. Grinnell's talk was put on the air over the network of the Columbia Broadcasting System.

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CHEMISTRY

Science Explains Failures In Cranberry Jelly Making

SCIENCE has come to the rescue of housewives, with an explanation of why their favorite recipe for making cranberry jelly sometimes won't work.

It's all on account of viscosity—a scientific word describing the flowing qualities of liquids. Chemists ascertain the relative viscosity of liquids by comparing them with water as to flowing quality. Thus, molasses has a viscosity many times that of water.

Reporting the results of their studies before the American Chemical Society meeting here today, George L. Baker and Ralph F. Kneeland of the Delaware Agricultural Experiment Station, say that a high viscosity means better jelly—up to a certain point. This, they found, is because pectin, the compound that actually makes jelly "jell," is most abundant in juices of a high viscosity.

One way viscosity can be increased is by the addition of sugar, since this makes a "heavier" and more slowly flowing liquid.

Studies at the Delaware Experiment Station show that far from being stable, the juices of ordinary "run of the market" cranberries have relative viscosities of anywhere from 40 to 132.

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IN SCIENCE

BIOCHEMISTRY

Fertility-Causing Vitamin Isolated as an Alcohol

VITAMIN E, the fertility vitamin without which female animals cannot produce young, appears to be one of the higher alcohols.

At the meeting of the American Chemical Society, evidence to that effect was presented by Drs. H. M. Evans, O. H. Emerson and G. A. Emerson of the University of California.

They made a concentrated extract of the vitamin-containing substance from wheat germ, known to be rich in vitamin E, and then by suitable chemical manipulation produced a crystalline substance so potent that laboratory animals were relieved of their sterility by a single dose of three milligrams—a less-than-pinhead sized bit.

Analysis of the substance showed it to be quite a complex higher alcohol, each molecule containing 29 atoms of carbon, 50 atoms of hydrogen and two of oxygen. Ordinary ethyl or grain alcohol has a much smaller molecule, consisting of 2 atoms of carbon, 6 of hydrogen and 1 of oxygen.

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DENTISTRY

Earliest Tooth Pastes Had Honey and Syrup Bases

ALTHOUGH the peoples of ancient and medieval times used various substances for whitening their teeth, tooth paste as we know it today was not introduced until 1900.

Tracing the history of dentifrices from ancient times through the 19th century, Miss Martha E. Faulk has reported to the American Pharmaceutical Association that the immediate ancestors of tooth paste were certain "pasty substances" first made in 1847 from various chemicals blended with honey and syrup.

Although these, like tooth paste, were convenient and could be handily carried about, they also deteriorated very easily.

Two other predecessors of tooth paste were tooth tablets, introduced in 1868, and tooth soaps, which were "all the rage" from 1880 to 1900.

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E FIELDS

METALLURGY

Gold Recovered From Very Thin Solutions

RECOVERY of gold from solutions where it is present in as small amounts as one part in four billion was reported before the American Chemical Society meeting by Dr. William E. Caldwell of Oregon State College.

Describing his process and its possibilities, Dr. Caldwell said that it makes possible rapid and accurate recovery of better than 95 per cent. of the gold in solution, and will be useful in removing gold from ores with a low percentage of gold content.

Since tests indicated that it was possible to recover up to 1/3,000,000 of an ounce of gold from 10.5 gallons of water, or one part in four billion, it was decided to apply the process to sea water. Accordingly samples were pumped from Puget Sound, and yielded 1/1,500,000 to 1/250,000 of an ounce for each metric ton of water. In other words, there is less than a tenth of a cent's worth of gold at the present market value in each ton of sea water. While the new process has proved its ability to extract gold from sea water, no claim is made that it can do so on a paying basis.

In the process, mercuric chloride and other chemicals are added to the solution containing gold, forming a precipitate which settles to the bottom where filtering, siphoning or other methods can recover it. Addition of lead and heating cause a minute gold bead to form.

The same method can be used to recover silver dissolved or suspended in minute quantities in solutions, although with not quite as high degree of accuracy.

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FORESTRY

Forests Catch Less Snow Than Bare Ground

FULLY developed forests catch less winter snow than do completely denuded areas, but they regulate the melting of what they do catch, retaining it longer and releasing it more gradually.

These facts, important in the West where summer water supplies depend largely on the snows of the previous win-

ter, have been determined in a three-year snow-water study by C. A. Connaughton of the Intermountain Forest and Range Experiment Station.

Less snow accumulates on the forest floor largely because a considerable proportion—a quarter to a third—is intercepted by the thick tree tops and melts and evaporates into the air before it can reach the ground. But the greater amount of snow lying on the open ground melts and runs off rapidly in the spring, while the shade of the forest holds its snow in reserve for many days longer.

Brushland, which some investigators have claimed to be equal to forest in snow-conserving capacity, in Mr. Connaughton's studies proved to be even better than open ground in catching snow. But like the open ground it had little ability to keep the snow from melting rapidly when the spring sun got to work.

A compromise between forest and open land, giving some of the advantages of both, was found in forest with many small openings in it. This permitted snow to get through the interlaced canopy of tree tops, and at the same time gave the snow reserves the benefit of protecting shade in the spring.

Mr. Connaughton's investigation is reported in detail in the *Journal of Forestry* (June).

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ANTHROPOLOGY

Eyebrows a Bridge Between Neandertalers and Indians

EYEBROW ridges, heavy and prominent, give a decided "Neandertaloid" appearance to a fragment of Indian skull dug up in Nebraska by Earl H. Bell of the University of Nebraska. Their possible significance is discussed in a report (*American Journal of Physical Anthropology*, April-June) by the finder and Dr. Ales Hrdlicka, curator of physical anthropology at the Smithsonian Institution.

Finds of this kind have been made a few times in the past, and on some occasions they have been made the basis of claims that Neandertal men existed on this continent. Mr. Bell and Dr. Hrdlicka disagree with this opinion, holding instead to the view that the hereditary tendency to produce "Neandertaloid" eyebrow ridges has persisted through the ages and crops up occasionally to cause confusion among archaeologists. The vast majority of Indians, both recent and ancient, have the same low eyebrow ridges that mark the skulls of all modern races.

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MEDICINE

New Technique Combats Cyanide Death Increase

THE ALARMING rise in the number of deaths due to cyanide poisoning, from 243 in 1931 to 416 in 1933 within the U. S. registration area, has led to the development of a new method of reviving persons who have taken cyanide, usually with suicidal motives.

Described by K. K. Chen of the Lilly Laboratories of Indianapolis, Charles L. Rose, and G. H. A. Clowes, at the American Pharmaceutical Association meeting, it consists of successive injections of sodium nitrite and sodium thiosulfate.

This combination is claimed to be ten times as effective as methylene blue, one of the most commonly used antidotes. The method has proved successful in reviving several cases of actual poisoning, although one person had ingested about five grams of potassium cyanide, an ordinarily fatal dose, before the injections could be administered.

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MEDICINE

Iron Content of Blood Has Effect on Sunburn Severity

PAINFUL sunburn, blistering and burning the skin of normal individuals, can be lessened or prevented by the administration of doses of iron, Dr. Howard L. Eder of the Santa Barbara Clinic has reported.

Iron therapy will also increase the resistance to sunburn of individuals more than normally susceptible to the sun's ultraviolet rays. By using iron, fair, red-haired individuals, usually chronic sufferers from freckles and blistering, can be made to stand an average exposure.

Cases known to be sensitive to sunburn were tested before and after being given the iron treatments. There was a marked increase of ultraviolet ray tolerance after the treatment, as well as improvement in color, appetite, and other signs of health. Ruddy, bronzed skin replaced raw, inflamed tissue.

Citing clinical cases to demonstrate his point, Dr. Eder said that observations indicate the blood of the human body to be "a parasite, living on other body tissues." If such is the case, the hemoglobin test now in use is not a sure way of learning a person's iron reserve, or signs of anemia, since the blood hemoglobin would maintain itself as long as it could draw upon iron reserves of the other organs of the body to supply its needs.

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