BIOPHYSICS

Mold Turns Glucose Into Fat; May Rob Pigs of Their Job

FARMERS of the far future may keep pans of Penicillium instead of pens of pigs. For experimenters of the U. S. Bureau of Chemistry and Soils have found a species of mold, known botanically as *Penicillium javanicum,* that beats the hogs all hollow at the job of turning carbohydrates into fat. At the spring meeting of the American Chemical Society in Washington, D. C., G. E. Ward and L. B. Lockwood told of their researches on this and other fat-making molds.

They found several species of *Penicillium* that contained a good deal of fat when well fed on glucose, but the one called *javanicum* was the champion of the lot. Its matted mass of white threads, when dried, contained from 20 to 43 per cent. of fat, depending on culture conditions. It takes only twelve days for the mold to produce the maximum quantity of fat out of the glucose solution.

When they extracted the fatty material it came out as a reddish-orange oil, with a nut-like odor. A preliminary chemical examination showed it to be built up of the same constituents as many of the fats and oils that are now familiar articles of commerce. The new "mold-oil" is still in the experimental stage, and no definite commercial use for it has been suggested, but there is no doubt that industrial uses may be found for it if large-scale production makes it cheap enough.

Several of Messrs. Ward and Lockwood's colleagues described other recent progress in the taming of the aspergilli and the penicillia. Two tasks at which molds have proved themselves efficient workers have been the production from glucose solutions of citric and gluconic acids. The former is the familiar acid of lemons; the latter is a rarer acid, of possible use in medicine and industry, which thanks to the work of the government researchers now costs dimes a pound where it used to cost dollars.

Science News Letter, April 1, 1933

MEDICINE

Calcium Fails to Stop Cancer; Pepsin Index to Ulcer State

CALCIUM, claimed by some investigators to have a checking effect on cancer, failed in this respect in a large number of experiments on mice performed by Dr. M. J. Shear of the U. S. Public Health Service. Dr. Shear reported his work before the spring meeting of the American Chemical Society in Washington, D. C.

He transplanted cultured cancers of two types onto the bodies of some 1200 mice, and administered three different chemical salts of calcium either in the drinking water, in the food or by injection into the body. But the results were all negative.

"Treatment produced no reduction in the number of takes," Dr. Shear said. "Slightly smaller tumors were sometimes obtained in the treated mice, but a definite, regular reduction in the size or in the rate of growth of the tumors was not obtained."

The amount of pepsin in the stomach juice of patients suffering from stomach ulcer may give physicians a good index as to the progress and outcome of the disease, it appears from a report by Drs. Arnold E. Osterberg and Francis R. Vanzant of the Mayo Clinic. They studied the pepsin concentration in the stomach juice of some 400 patients after an Ewald type of test meal. They found a correlation between the pepsin concentration and the severity of symptoms which indicated that the pepsin concentration is a valuable prognostic sign.

Science News Letter, April 1, 1933

INDUSTRIAL REVOLUTIONIST, 80

ELECTRICITY-BIOGRAPHY

Millions of Birthday Lights For Dr. Elihu Thomson

NOT MANY REMAKERS of the world see their handiwork stir a civilization and infuse it with new comforts and new ideas.

Elihu Thomson is one of the industrial revolutionists of yesterday and today. Hale and hearty at four score years he was given a birthday party March 29 at Massachusetts Institute of Technology. The lights on his birthday cake are not merely 80, they are 80 times millions, electric lights, flashes from electric trolleys, flares from welding, throughout the world.

For Elihu Thomson, like Edison, is an electrical pioneer. Both present and past tenses must be used in describing his achievements, for at Lynn, Mass., Elihu Thomson still bears the torch of research onward in the General Electric Company's Thomson Research Laboratory that was built around him.

He was one of the original "big four" in pioneer electricity in America, the others being Thomas A. Edison, Charles F. Brush and James J. Wood, all of whom have died.

He successfully started an electric-light system, 1878-82, using arc lights.

He invented the first three-phase electric dynamo, a type of design now in everyday use.

He was the first man to use transformers on electric circuits in a modern manner.

He discovered the secret of electric resistance welding. (*Turn Page*)

He made the first practical electric meter for measuring watts, the forerunner of some 30,000,000 meters now installed in homes, factories, and stores.

Fifteen major medals in science and engineering have expressed the regard of his colleagues in scientific research and engineering. He was the first wearer of the famed Edison medal of the American Institute of Electrical Engineers and he is the only person to have been awarded the three high British science awards, the Hughes, Kelvin and Faraday medals. The John Fritz medal is another of Elihu Thomson's honors. He is, of course, a member of the National Academy of Sciences and he is a foreign member of the Royal Institution of Great Britain.

As a youth in Philadelphia his playtime was spent in mechanical and electrical experiments. He made tops with a foot lathe, constructed a frictional electric machine that knocked his father off his feet, ground lenses for an intricate microscope, built a pipe organ, and followed photography as a hobby.

Interested in astronomy for many years, he has his own observatory and a small telescope which he made himself. Nearly 35 years ago he suggested the use of fused quartz for telescope mirrors and the climax of a long career may be the construction under his supervision of a fused quartz 200-inch-diameter mirror for the giant telescope proposed for California.

Science News Letter, April 1, 1933

CHEMISTRY

Dyes Fading in Light Become New Compounds

COLORED fabrics that fade on exposure to light are not fading in the same way that they do when their colors are "washed out" in the laundry. The latter process is merely a reversal of dyeing: the dyestuff becomes "unstuck" and diffuses out into the water.

Sun-faded fabrics have their dyestuffs actually changed over into other substances, which may have colors of their own. This accounts for the fact that a sun-faded fabric may not merely be paler than it was when new, but may have a quite different hue.

These facts about sun-fading were brought out in a discussion before the meeting of the American Chemical Society, by William D. Appel of the U. S. Bureau of Standards, and William C. Smith, of the Lowell Textile Institute.

Science News Letter, April 1, 1933

ARCHAEOLOGY

Oldest Old Testament Scenes Unearthed on Euphrates

Magnificent Frescoes Surprise Scholars by Revealing That Christian Artists Borrowed From Jewish Art

ARCHAEOLOGISTS digging into ruins of Dura-Europos on the Euphrates have made a discovery of sensational importance. They have found a Jewish synagogue built in 244 A.D. and adorned with paintings from the Old Testament. The pictures show Moses and the Tablets of the Law, Pharaoh pursuing the Israelites into the Red Sea, and other familiar Bible scenes. With the art of the Catacombs, these are the oldest pictures of Old Testament scenes ever uncovered.

News of the discovery has been received at Yale University from Prof. Clark Hopkins who is directing excavations at Dura. The site is being excavated jointly by Yale and the French Academy.

"I think that few excavators in this century have had the honor and privilege of reporting more astounding and magnificent discoveries than those made this last month at Dura," Prof. Hopkins' reports says.

Describing the excavation of the synagogue, he explains: "We have dared so far to dig only two and a half meters down, but as far as we have dug we have found the walls completely covered with a most magnificent series of frescoes. Eleven scenes are complete, some six others we have in part without counting the frescoes of the front and side walls."

Commenting on the significance of the Bible paintings, Prof. M. I. Rostovtzeff of Yale said the frescoes reveal that Christian art borrowed from Jewish pictorial art in style, composition, and subject matter. Few scholars had even suspected that this might be the case. It had been a common belief among some students that Jewish religion forbade decorating religious buildings with paintings, though recent discoveries have undermined this theory.

Prof. Rostovtzeff said: "This sensational discovery at Dura is of great importance for the study of the Bible, the history of Judaism in the days following the destruction of the Temple, and, first and foremost, for the history of the early development of Christian art."

The archaeologists at Dura have built a roof over the remains of the synagogue to protect it from sun and rain. Photographs and colored drawings of the frescoes have been made. When all the preliminary work is completed, the murals will be removed from the walls and transported to a public museum for exhibition.

Science News Letter, April 1, 1933

PSYCHIATRY-EDUCATION

More Children Headed for Asylums Than for College

AT the present rate, more public school children will go to insane hospitals than will go to college, declared Prof. C. E. Turner of the department of biology and public health, Massachusetts Institute of Technology, in a report to the American Physical Education Association.

Pleading that the schools not reduce too drastically their health and physical education budget, Prof. Turner said:

"One would not be so absurd as to say that physical education is a specific preventive against insanity, but it is not far-fetched to say that teaching our people to play is one of the few important agencies through which we can combat that increasing pressure upon mental and emotional life.

"Our people need play and relaxation more than ever before," he continued. "In the hospitals of the United States there are more patients suffering from mental disease than from all other diseases combined.

"The excitement and pressure of modern life has increased together with the number of facts children must learn and the number of adjustments they must make. Every social indication points to the need of physical and recreational activity under wise leadership—a physical activity program which will develop enjoyment of exercise,