

PHYSICS

Photographic Eye Denied As Myth by Physicist

THE "photographic eye," capable of reading an entire page of print at a glance, is a myth.

Eye movement photographs of subjects taken while they were reading did not reveal a single person with such a magical eye, Dr. J. F. Neumueller, director of the American Optical Company's bureau of visual science, has learned.

Only one reader with a reading span of six to eight words per glance was found, Dr. Neumueller declared. The average reader of the college level had a span of 1.25 words. However, the average person, the scientist stated, does not use his maximum reading glance.

Science News Letter, November 12, 1938

BIOLOGY

New Facts Learned About Nitrogen Capture by Plants

PERHAPS the one fact about agricultural biology that practically everybody knows best is that plants of the legume family (peas, clovers, locust trees, etc.) make possible the capture of free nitrogen from the air and its conversion into useful fertilizer in the soil. The primary role of the bacteria that live in the little lumps or nodules on their roots is part of the instruction of every school child nowadays.

Yet there have remained large blank spaces in scientists' knowledge of this process, vitally important to everyone who eats beans or peas, or the milk and meat of cattle that have eaten alfalfa or clover. We have known for a good many years that the process goes on, but a lot remains to be learned about *how* it goes on.

Some considerable strides forward are shown in a newly published little book, written by Prof. Artturi I. Virtanen of the University of Helsinki, Finland (*Cattle Fodder and Human Nutrition*, Cambridge University Press). Prof. Virtanen has long been known among scientists for his researches on the nitrogen-fixing bacteria.

Hitherto it has been rather generally assumed that since plants in general like their nitrogen in inorganic form, the bacteria in the legume root nodules must present their hosts with the fixed product in the form of ammonia. Prof. Virtanen has shown this assumption to be erroneous: the bacteria turn out quantities of aspartic acid, and the plants are able to

take this acid directly into their systems and make use of it.

Aspartic acid is one of the amino acids, which are the building-blocks of proteids, and through them of living protoplasm. Aspartic acid has also been found in quantity outside the roots, in the soil near the nodules; the bacteria are lavish producers.

If the bacteria thus benefit the plants whose roots shelter them, they in their turn are dependent on the plants. Although pure cultures of them can be grown outside the plants, they apparently are able to capture atmospheric nitrogen and convert it into usable form only when they are surrounded by legume tissue and bathed in legume sap.

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PSYCHOLOGY

Take Parents to Task For Child's Misdeeds

PARENTS, these days, are being taken to task for their children's delinquencies, which may range from ordinary "bad behavior" to crime and drug addiction. Mental disorders, too, are blamed on the parents' attitude.

Parents who show great affection for their children, pet them and look after them and worry over them, are unconsciously hiding a hostile feeling toward the child which is the result of the parents' own inner feeling of bitterness about the world in general. The result of the excessive love and care for the child is to make him his parents' slave. When he grows up he cannot become independent. He is either too submissive for his own good, or he takes the attitude of showing parents and other authorities "where they can get off." And he is likely to end up a good-for-nothing, a gambler, or worse, a drug or alcohol addict or a criminal.

This explanation of parental attitudes is given by Dr. Gregory Zilboorg of New York. Another New York psychiatrist, Dr. Margaret E. Fries, traces the child's behavior to the parents' feelings before the child is born. Infants ten days old, she reported, show fundamental differences in behavior. Some of this may be due to injury at birth or a prolonged birth period. Some of it is due to the hidden and perhaps unconscious feeling of parents. The very way a mother holds her baby, Dr. Fries finds, shows how she feels about the infant. The baby himself senses this attitude, Dr. Fries believes, and responds accordingly.

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IN SCIENCE

INVENTION

Machine Gun Pistol Patented in United States

A MACHINE gun pistol, whose spiral cartridge magazine resembles somewhat the coils of caps found in the ordinary cap pistol, has been patented by Herman J. Kobe of Bryan, Ohio.

Capable, in the version described in detail in the patent, of holding 50 cartridges, the gun may be fired as an automatic, emptying the magazine by a single pull of the trigger, or may be fired a shell at a time.

The cartridges are arranged in the spiral holder crosswise to the gun. As the pistol is fired and the empty cartridge ejected, the next bullet moves into place in the breech, impelled by a spring arrangement in the center of the spiral magazine. The bullets are turned as they move into firing position so that the lead points forward in the direction of fire.

The magazine is no wider than the pistol, thus adapting it to be carried in a holster. The magazine is located in front of the trigger and trigger guard and is not much larger. Light weight and freedom from jamming are claimed by the inventor. The patent, No. 2,130,722, is assigned to Lisle M. Weaver, also of Bryan.

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RADIO

New Television Receiver Kit Costs Less Than \$100

MARKING another step on the long road to television as a practical reality, a television receiver constructing kit whose total cost is under \$100 has been placed on sale by a New York radio equipment manufacturer. The set provides 441-line reception, designed for the type of program now being broadcast by the National Broadcasting Company from the Empire State Building and soon to be sent out by Columbia Broadcasting System from the top of the Chrysler Building.

The set uses 15 tubes, which are included in the kit. The image is produced in a five-inch cathode ray tube. The set is one of the cheapest thus far placed on the market.

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E FIELDS

CHEMISTRY

Sugar Solution Is Used In Freezing of Fruit

DELICATE quick-frozen strawberries, that rival the fresh fruit in their taste and texture when defrosted and served, are now being preserved by chilling them in cold sugar syrup.

In a report to the Food Preservation Conference, sponsored by the University of Tennessee and the American Society of Refrigerating Engineers, R. Brooks Taylor of the University's Engineering Experiment Station described the improved freezing process.

Merit of the method, Mr. Taylor indicated, is that the individual fruit is frozen at a temperature a little above zero degrees Fahrenheit instead of at severe temperatures used in some other methods. The freezing agent is sugar solution kept cold by cooling coils in the freezing container.

Over 200,000 pounds of fruit have now been frozen with excellent results. Only six minutes is required for the treatment.

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ARCHAEOLOGY

Many Building Inventions Credited to Old Egypt

EGYPT or Mesopotamia—which was first to invent familiar features of architectural construction?

There's a question not yet positively answered. Expeditions keep finding evidence to revise our ideas of how old architectural devices really are. Only one point is very clear: city dwellers of early time lived much better than we have supposed, and they were not backward at inventing architectural improvements.

Recently, Mesopotamia has been getting the limelight, with the discoveries in 22 layers of ruins at Tepe Gawra. They show that architecture was already a fine art in 4000 B.C. An architectural gem of a temple was built by men who knew how to construct piers and pilasters—which we had previously thought inventions of the Middle Ages.

The layer of Tepe Gawra-8, which was a city of about 3500 B.C., was laid

out by plan and its better homes had windows, and such pleasing features as vaulted ante-chambers, recessed walls and niches.

But Egypt is not being left out. In a new and remarkably complete work on "Egyptian Architecture as Cultural Expression" Prof. E. Baldwin Smith, Princeton's professor of the history of architecture, gives Egypt credit for many inventions.

Egyptians were first to use ventilators for cooling their houses, he says. Egyptians gave the Greeks the idea for lion-headed water spouts. They dug crypts under their temples, a device which Christians adopted.

Prof. Smith also credits Egypt with having the earliest known vertical city houses. They worked upward in evolving houses of several stories, by first using the roof of a one-story house for a cool retreat, then enclosing it to make a second story.

They were first to have town-planning on the regular grid arrangement. And Prof. Smith says: "Undoubtedly their masonry construction was the first in the history of man."

He mentions a good many other Egyptian "firsts"—piling up the debt we owe to the Nile civilization, for all these features are familiar in the most modern city.

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INVENTION

New Telegraph Typewriters Permit Direct Sending

USING a new, simple printing telegraph system, newspaper reporters at a news event can now sit at their own typewriters and send their stories directly back into their home city rooms.

Devised by W. G. H. Finch, expert on radio and wire facsimile, the new device utilizes ordinary telephone wires to carry the typed message and feeds its signals by electrical induction in to the wire without touching them.

Special merit claimed for the new method is that the cost of transmission is based only on the time the telephone line is actually used with the tolls comparable to an equivalent local or long distance telephone call.

A special typewriter keyboard is carried by the reporter to the assignment and he can operate from the nearest telephone. Mr. Finch, formerly assistant chief engineer of the Federal Communications Commission, has just received patent No. 2,133,811 covering the new system.

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STANDARDS

Standards Bureau Issues Gold Marking Standard

A NEW voluntary standard for marking gold jewelry that provides that every quality mark shall be accompanied by a registered trade mark to fix responsibility has been issued by the National Bureau of Standards in cooperation with jewelry trade associations.

Formulated at public hearings at which the tolerances of the national stamping Act of 1906 were scored as being too "liberal" and as allowing some manufacturers to take advantage of the marking allowances of the law to sell below-grade goods, the standard goes into effect on new production on Nov. 25. An additional year is allowed for clearance of existing retail stocks.

Ten-karat gold is the minimum on which a quality mark should be permitted, it was decided at the hearings.

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ARCHAEOLOGY

Unearth New Puzzle In American Prehistory

DISCOVERY of American flint tools surprisingly like handiwork of Europe's Stone Age cave men is announced by Dr. A. R. Kelly, who has been excavating Indian ruins in the neighborhood of Macon, Georgia.

In a report to the Smithsonian Institution, Dr. Kelly says that several thousand knives, scrapers, projectiles and other flint implements belonging to unknown prehistoric people have been found.

Cautiously refusing to assign a date to the prehistoric hunters, Dr. Kelly says their work may appear deceptively ancient. He does state that they go back to a time before pottery making was known in the Southeast, which argues for quite lengthy antiquity. The flints are worn by weathering to suggest great age, though they may have decomposed with unusual rapidity in their surroundings. Also, many have a look of the famous Folsom technique, which marked the handiwork of America's mammoth and bison hunters near the end of the Ice Age. One projectile he describes as truly Folsom, indistinguishable from Folsom points found in the east, though different from the western type.

The workmanship is described as resembling artifacts of the middle and late Old Stone Ages in Europe.

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