SCIENCE NEWS

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RADIO MOVIES

RODS of quartz, through which light is transmitted like water through a hose, make possible the latest method of television—the radio movies demonstrated by C. Francis Jenkins, Washington inventor. As a result he is able to substitute a seven-inch drum for the two- or three-foot disc that previous methods of television have employed.

If light is allowed to shine into one end of a rod of fused quartz, it is reflected back and forth as it goes through it. Practically none is lost by leaking out the side, but all emerges through the end.

In the Jenkins home radio movie receiver, which may soon become a common attachment to radio sets, the current from the set, instead of operating the magnets of a loud speaker, causes a glow of a small metal plate sealed in a bulb containing the rare gas, neon. Such a neon lamp glows immediately, as soon as the current is turned on, and is extinguished as soon as the current is turned off. The ordinary filament of the incandescent lamp continues to glow for an instant after the current stops, and so can not respond to the rapid changes required by the television receiver.

In previous methods of seeing by radio, either of movies, or actual objects, the person viewing the received image gazed directly at the surface of a neon lamp. A revolving disc with a spiral row of holes obscured all but the proper spot of the neon glower. These spots of light, seen in rapid succession, were built up into the complete picture seen by the observer, just as the successive pictures of a movie film shown in a theater merge together into a continuous view on the screen.

Mr. Jenkins employs a cylindrical glass tube, in which there is a row of small neon glowers. This is at the center of a revolving drum, seven inches in diameter. Around the surface of the drum is a helical row of small holes. Extending from these holes, inside the drum, to an inner cylinder, almost in contact with the neon lamp, there are a number of the quartz rods, about two inches long, somewhat resembling the wire spokes of a bicycle wheel.

An ordinary electric motor, which is arranged to run in synchronism with the motor at the transmitter, spins the drum around at a speed of 3,600 revolutions a minute. A revolving contact, or commutator, attached to it serves to connect the separate glowers in the neon tube, and so enables the current from the radio receiver to light them at the proper time. The light from the glowing neon tube is carried by the quartz rods out to the round surface of the revolving drum, where the picture is actually seen. Thus a small neon lamp is made to serve the purpose of a much larger one, one as large as the drum itself. The drum turns on a horizontal axis, so a slant mirror and a large magnifying lens enable the persons viewing it to see the picture vertically, as on a movie screen.

In his demonstration Mr. Jenkins used a motion picture film as the original object, and this was reproduced both by wire, in another part of his laboratory, and by radio, in his home some miles distant. However, he claims, the apparatus is just as applicable to the broadcasting of views of actual persons or objects. The received picture is a silhouette, and does not show gradations of light and shade. This, he thinks, is not a serious objection, but it is one which he expects to overcome. "At present," he says, "the apparatus is in the 'crystal set stage.'" Future developments, he promises, will bring it to the perfection of present-day radio or movies.

A NEW METHOD OF TRANSPORTATION

A NEW method of transportation with the motive power furnished by spurts of expanding gases, like the trail of a Fourth-of-July rocket, is about to make a bid for practical success.

After secret experimental development, a rocket automobile has been given speed tests at the racing track of the Fritz Opel motor car factory at Russelsheim near Frankfort, where it was built. Speeds of slightly over 60 miles an hour were attained eight seconds after the start.

A demonstration before experts at the Avus racing track in Berlin is scheduled for the near future. As the speeds on this track are limited to a hundred miles an hour, plans are under way to utilize later a stretch of railroad track which has been offered for this purpose by the German States Railways.

The theoretical investigations which inspired this rocket-propelled automobile were begun by Professor R. H. Goddard, American scientist, who designed a rocket that would travel to the moon. Later mathematical studies were made on the same problem by Professor Max Vallier, of Munich, and Albert Mueller, whose results were available to the Opel Company's designing engineer, Sander.

Tests of the rocket automobile are believed to be merely preliminary to the construction and launching of a rocket airplane capable of arising to heights that ordinary propeller-driven airplanes can not possibly attain. Journeys to other planets across the great distances of airless space are theoretically possible through the use of the rocket exhaust kick as the motive power. For experiments show that the kick of the exploding rocket charge is just as effective in a vacuum where there is no air as it is under ordinary conditions where there is plenty of atmosphere. Propellers of ordinary airplanes need the air to work against. The rocket is effective in vacuum for the same reason that a rifle fired in an airless chamber would have the same sort of kick that it would in air.

The rocket airplane, once it reached the airless outer space or the upper rarefied portion of the atmosphere,

would attain great speeds because of the lack of air resistance.

The Opel rocket auto looks like a multiple-barreled piece of light artillery in speedy retreat. From the rear of the car project twelve large tubes arranged in a rectangle. From these tubes the exploding gases emerge with terrific kick which sends the car racing along the track. Any highly explosive mixtures can be used such as light gasoline, alcohol, or even pure hydrogen and oxygen mixtures which give the greatest expansion for the least weight.

LIVER DIET FOR ANEMIA

THE liver treatment for pernicious anemia recently developed in America has given great success in the hands of British physicians.

Drs. Stanley Davidson, J. G. McCrie and G. Lovell Gulland, of Edinburgh, have announced through *The Lancet* that in their experience the feeding of liver and liver extract has helped anemia patients more promptly and regularly than any former method.

"The most important point," they declare in their report, "is that recovery is more complete. Formerly one had too often to be content with a count of about 3,500,000 red blood corpuscles (per cubic millimeter); now an extra million or more may be confidently expected; the whole blood picture returns to normal with much greater frequency and certainty, and apparently remains so indefinitely, so long as the treatment is persevered with."

The benefits of a liver diet for pernicious anemia were put before the medical world about two years ago by Drs. G. R. Minot and W. P. Murphy, of Boston, Mass. The method has sprung into wide-spread use with the result that calves' liver now retails in the United States for ninety cents a pound.

Half a pound of liver daily, however, is for many patients a gustatory impossibility. Many acquire a distaste for it that can not be overcome even to recover from a hitherto incurable disease. To surmount this difficulty, Dr. E. J. Cohn and a group of collaborators at Harvard University have endeavored to isolate the active principle in liver in a liver extract. Five to fifteen grams of this concentrated form is equal to 200 grams, or approximately 6 ounces, of whole liver and produces corresponding effects. Liver extracts from the United States, Germany and Great Britain are now on the market and give about equally good results. Since the extracts are soluble in water a single dose, equivalent to nearly 30 ounces of whole liver, can be given to a patient too weak to take solid food.

SERUM FOR ALL TYPES OF PNEUMONIA

A NEW serum for treating pneumonia, developed by Dr. L. D. Felton, of Harvard University, has given very promising results in combatting this highly fatal disease. The serum marks an advance in that it can be used for all four of the recognized types of pneumonia, according to Dr. Russel L. Cecil, of the Bellevue Hospital, New York City, who has obtained very efficacious results from its use in the pneumonia clinic of that hospital. It works best with types one and two, the two groups that comprise the majority of pneumonia cases. The recoveries after its use with type one have been very encouraging, indeed, Dr. Cecil declared, though the deadly type three, which always has had a very high death rate, has proved the least amenable of any group.

Pneumonia serums used in the past have been specific for each type. Since certain laboratory procedures have to be followed out before the type from which the patient is suffering can be determined, precious time often has to be lost before the doctors know which serum to give. The Felton serum of mixed cultures can be administered on admission to the hospital and frequently a gain of many hours can be made in checking the course of the disease.

CATNIP OIL AS A BAIT

BOBCATS, mountain lions and lynxes, which assist in destroying from $20,000,000 to $30,000,000 worth of game and livestock each year, are being baited on a large scale with catnip oil, according to the United States Biological Survey.

Prior to the discovery that catnip makes an effective bait the taking of mountain lions particularly presented a serious problem to hunters and trappers. They frequent rough, inaccessible country and had to be trailed with dogs and shot after being driven into caves or up trees. Last year literally hundreds were lured to traps and poisoned bait with catnip oil.

Dr. A. K. Fisher, in charge of economic investigations, is credited with the discovery. Walking through the National Zoo, with a sprig of catnip in his pocket, he noticed that a mountain lion woke up when he passed by and that a tiger next door, reputed to be dangerous, seemed to be courting his friendship. It minced up to the bars and tried to follow him.

Dr. Fisher tossed the catnip over the fence. The tiger purred and sniffed and rolled over on it, licked the fur where it had touched, located the sprig on the floor, pounced upon it and finally ate it up. He reported this singular conduct to the survey and an investigation was begun to determine whether the plant could be used effectively as bait. The fact that oil of catnip was not produced anywhere on a commercial scale at first delayed the experiments. The Bureau of Chemistry reported that only minute quantities had ever been extracted, but a small amount was finally procured from which it was determined that the oil carried the characteristic odor and that this odor would persist for several months in the open air.

A catnip garden was then planted on the Experiment Farm at Arlington, from which enough oil was secured for field experiments. These proved so successful that additional crops were planted by the government at Saratoga Springs, New York.

Some hunters have reported taking every "cat" that came within the vicinity of traps baited with the catnip and the result is that the oil is now being distributed and used on a large scale.

Last year 246 lions, 3,677 bobcats and 41 Canada lynxes were taken by hunters employed by the Biological Survey and, while some of these were probably caught by the old method, hundreds were victims of their taste for catnip.

CHILDREN'S READING HABITS

THE extent to which a child buries his nose in his book when he reads or studies is determined to a considerable extent by his imitation of other readers that he sees. This is the belief advanced by E. B. Notson, of the University of Arkansas, in a report to *School and Society*.

From measurements made during two years, Mr. Notson concludes that the average first grader holds his primer about eight inches from his eyes. This distance increases rather steadily a little less than an inch a year until at high-school age he is holding his Latin book and his algebra thirteen inches away. After that, there is only a small and slow increase to manhood.

The change in distance can not be attributed to the chief ocular features involved, which are accommodation and convergence. "The most influential factor seems to be imitation. Children imitate the reading posture of older children and adults and consequently, as they grow, their books naturally grow farther from their eyes until adolescence, when both physical growth and reading distance slow up and eventually become stationary. Such an explanation may at first seem absurd, but when all the data are in this conclusion will be inevitable."

Measurements made by Mr. Notson are cited as showing that the usual recommendation for children to hold their books 14 inches away is actually very little followed. Whether the normal tendency of children to hold their books closer to the eyes is best for the children's sight is yet to be determined.

EXPEDITION TO RUSSIAN TURKESTAN

FRAGMENTS of a lost race of white men, marooned on lofty mountain ranges in interior Asia among a sea of Mongol folk, are among the objectives of an expedition participated in by German, Austrian and Russian scientists. The group goes into territory hitherto never explored by Europeans, under the leadership of W. Rickmers, of Bremen, who conducted a German expedition into Turkestan some years ago.

The mountain regions to be investigated are known as the Transalai and the Seltau. They are parts of the Himalaya uplift, lying to the northwest of the "roof of the world," in Russian Turkestan. Formerly they were lumped together under the name Pamir.

It is believed that their inhabitants are remnants of Indo-Germanic races, descendants of the stock that populated India and Europe. The theory is that they sought refuge in these mountains when the Mongols overran Asia during the Middle Ages, and have remained there ever since. One of the members of the expedition is a specialist in the structure of languages; he will try to gain some clue to the ancestry of the mountain folk from their speech.

Other members of the party will represent the sciences of geology, geography, meteorology and natural history. Four expert mountain climbers will accompany the party for the purpose of scaling the more difficult peaks and making a study of the high glaciers.

ITEMS

SOME of the dreaded after-effects of scarlet fever may be lessened by new tests developed by Dr. A. A. Osman, of Guy's Hospital, London. The cases of scarlet fever that are likely to develop kidney complications, one of the most serious of the consequences that scarlet fever leaves in its wake, can be detected by these tests in the early stages of the disease and preventive treatment administered in the shape of doses of simple alkaline compounds. The number of cases of kidney complications has been reduced by Dr. Osman by means of these methods from 5.5 per cent. in an untreated control group of 316 to .6 per cent. in a treated group of 620.

CHILDREN may have to welcome an undesired addition to the whooping cough and measles afflictions they have to undergo in the process of becoming grown up. Several cases of a new eruptive disease which does not fit into the category of either measles or German measles, though it resembles both, have broken out in Paris, according to reports received from the French correspondent of the American Medical Association. "The fifth disease," as French physicians have christened the new malady of children, does not provoke symptoms of a serious character though certain changes in the number of cells in the blood have been noted. Many of the children who have "taken" the disease have histories of both types of measles and of scarlet fever.

BIG predatory locusts, that prey on their own fellow-insects instead of on growing grain crops, are being tried out in Greece as one means of combatting the pest of ordinary locusts now threatening the fields, according to word received from Athens. These modern descendants of one of the plagues of Egypt have been causing serious losses to Greek agriculture during the past few years, and the Ministry of Agriculture is preparing to spend 16,000,000 drachmas (approximately $3,200,000) in a campaign against them.

A MACKEREL with an unbroken rubber band running over its back and right through the lower part of its body is the zoological puzzle recently examined and reported by Dr. E. W. Gudger, of the American Museum of Natural History. The fish was purchased on a market stall, so that its history is unknown. Dissection indicates that the band must have been snapped around the fish's body, and that its pressure and friction forced it upward through the tissues of the abdomen. These later healed shut beneath it, leaving it apparently "wove through" the living fish. Other mackerel have been reported with rubber bands placed around their tails by unknown persons, but this is the first case recorded where the band went through the body.