

This important development in rubber chemistry was announced through an exhibit of the U. S. Bureau of Standards at the meeting of the American Association for the Advancement of Science in Cleveland. The trinitrobenzene is used as a vulcanizing agent in rubber in place of the sulfur which is the chemical usually used to keep the rubber from being sticky.

The possibility of using trinitrobenzene to harden rubber during its manufacture was first suggested by a Russian chemist, Dr. Ivan Ostomislensky, of Moscow, who did his research during the World War in 1915. The chemists of the Bureau of Standards have now put this discovery to practical application and proved that the benzene compound produces rubber just as durable and strong as rubber using sulfur, with the added advantage that it is non-corrosive.

It is expected that the new benzene rubber will find important use in the manufacture of electrical cables and wire coverings in which the sulfur vulcanizing agent has caused some trouble in the past. It may also be possible to make rubber films or sheets to be used as protective coverings of metals that are attacked by sulfur.

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GENETICS

High-Yielding Corn Bred From Runts

HIGH-YIELDING, new varieties of corn, the hybrid offspring of parents inbred until they often look like runts, were described before the meeting of the American Association for the Advancement of Science in Cleveland by Prof. R. J. Garber, of the University of West Virginia. By breeding corn on its own pollen for generation after generation, it has been made possible to sort out many of the complex hereditary factors that make for high yield, and then by crossing the various pure-bred strains to combine the desired "ingredients" for more bushels per acre, just as a housewife assembles a cake.

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PHYSIOLOGY

Effect of Glandular Secretions On Sex Discussed by Scientists

Extract is Found to Correct Feminine Underdevelopment; Operation Makes Cockerel of Pullet in Appearance Only

THE latest information on sex, as it is influenced by glands, was exchanged by scientists engaged in many different institutions when they gathered in Cleveland at the meeting of the American Association for the Advancement of Science.

Underdevelopment of the essential physical basis of femininity may be corrected by an extract from a small gland located under the brain, researches by a University of Wisconsin team of three workers indicate. They are Dr. H. L. Fevold, Dr. F. L. Hisaw and Dr. S. L. Leonard. An extract from the front part of the hypophysis, a small ductless gland whose function was for many years a riddle, was found to promote very powerfully the development of the female sex glands in rats. Immature females less than four weeks old were brought to sexual maturity in three days by a series of injections of this extract. Continued injections after this point proved too much of a good thing; they provoked a great overgrowth of the ovaries.

At the University of Chicago, experiments by Prof. Carl R. Moore and Dr. Dorothy Price on the same glandular hook-up indicated that the Steinach hypothesis of an antagonism between the hormones, or active principles, of the male and female sex cells will not stand up. It is true that male extract injected into the veins of a female animal will set back the sexual development of that animal, and female glandular extract will affect male animals similarly. But the Chicago experiments produced evidence that this effect comes about indi-

rectly. The sex-gland extract affects the front lobe of the hypophysis, and this in turn affects the sexual development of the subject of the experiment.

Although removing the sex gland from a pullet will cause her to assume an external appearance much like that of a cockerel, and even produce within her body the development of what looks very much like a male sex gland, the luckless fowl thus transmuted is still not a real male. This is indicated by experiments reported by Dr. L. V. Domm, of the University of Chicago.

Dr. Domm took part of the contents of such an artificially induced "male" sex gland and attempted to fertilize the developing eggs of hens with them, but obtained no positive results. He also transplanted into the developing "male" glands of operated pullets pieces of real sex glands from cockerels, and allowed the transplants to grow. Later he removed the composite glands, and found motile sperm cells in them; but the fowls were nevertheless unable to function as males.

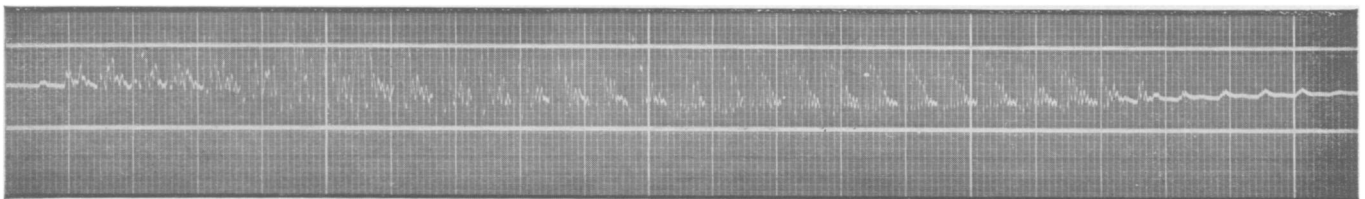
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PHYSICS

Photograph of Human Voice Produced in One Minute

A PHOTOGRAPH of the human voice is produced in one minute by a new rapid record oscillograph exhibited by the Bell Telephone Laboratories of New York at the American Association for the Advancement of Science in Cleveland.

This machine can be plugged into a



THE PICTURE OF THE WORD "SCIENCE"

As it is photographed by the rapid record oscillograph of the Bell Telephone Laboratories, demonstrated for the first time at the Cleveland meeting of the American Association for the Advancement of Science. Each little sound in the word has its own effect on the shape of the curve which is made by the vibrating sound waves acting on an electrical circuit.

telephone line or connected to a microphone and out of it will come a wavy line record that gives the exact characteristics of any voice, music or sound from zero to three thousand cycles per second. Duralumin wires of very slim diameter cast a shadow on the photographic paper record and their vibrations set in motion by the voice currents make the record.

A. E. Melhouse, of the Laboratories, also demonstrated a high-speed relay that can switch a current in three thousandths of a second. One use for this relay will be to silence a telephone line during pauses in the conversation. Less efficient kinds of similar relays have been used on the Transatlantic telephone circuits.

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more oil and very little coal, warned Prof. East. We may be hard put to it to find substitute sources of power. We are prodigals of inherited wealth now, and there is no guarantee that we shall develop the knowledge needed to develop new sources. Such things as wind, waterfalls and tide promise little, and the "cracking of the atom" is a dream.

The population of the world will be greatly changed by 2,500. The white race will be in full possession of the Americas and of Africa. The native Indian and black population will largely disappear, and their remnants will be absorbed in the hybrid population. Asia will be held solidly by the Mongolians, and the brown race may hold its own but will probably not gain.

A scientifically eugenic social system will be a necessity if the race is to survive on a high plane. Caste systems of the past were roughly eugenic, though scientifically unsound. Present-day humanitarianism is dysgenic. A system of penalties for breeding undesirables, and of rewards for the right kind of offspring, may come into existence.

We may by then wipe out all disease germs, and with them such ills as tuberculosis, diphtheria and the "flu." Through better care of infants, the average life-term may be raised to 65 years. But this does not mean that we shall live forever. The increased industrial pace will probably bring into being new "functional diseases."

And at the end, the scientists took the audience into their confidence. "All this is quite possible and may well come to pass," they said. "Anyhow, it's a lot of fun to speculate this way. But don't take any of it too seriously."

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PROPHECY

What Science May Make Of the World in 2,500 A. D.

Universal Language and Flood of Inventions Are Part Of Picture, But Warning Is: Don't Take It Too Seriously

A WORLD of the future, whose 350 hundred million people will be a grand blending of all races with one universal language for the spreading of culture and propaganda lies alike, benefiting from an ever-increasing flood of inventions and scientific discoveries and yet hard put to it for sources of power, with birth control knowledge in everybody's hands and babies at a high premium—these were some of the features of the centuries to come as imagined by three scientists who spoke before an interested, and at times amused, audience at the American Association for the Advancement of Science in Cleveland.

All this, and a lot besides, may come to pass—if. At the very outset, Prof. A. V. Kidder, archaeologist of the Carnegie Institution of Washington, warned his hearers, from his wide experience as a student of the rise and fall of past civilizations, that our present culture has all the symptoms of "being in for a terrific crash" unless by concerted effort scientists do something to forestall such an ill event.

But assuming that civilization will go on, Prof. William F. Ogburn, of the University of Chicago, and Prof. E. M. East, of Harvard, presented some Wellsian snapshots of the future, from their points of view as sociologist and biologist.

The whole nation will be citified, Prof. Ogburn said. Developments in transportation and communication will make every new thing, that the city man is now first to get, available just as quickly to the farmer. Farmers will therefore tend to become like city

people not only in the mechanics of their daily lives, but also in their folkways, their philosophy, their religion and everything else.

There will be less contrast between farm and factory, for in many cases the factory will be on the farm, to make use of raw materials right at the source. Distribution of electric power will make this possible. There will be less of "artificial foods" made by chemical means than many speculative minds now imagine. The old trilogy of the sun, soil and rain will continue to be the mainstays for food and clothing. But due to increased efficiency in farming, only a fraction of the people will be needed on the land and the rest will be absorbed into industry.

By the year 2,500 there will be no



CAMOUFLAGE AND SHIELD

*In one are supplied by an umbrella-shaped piece of sponge that this Australian crablet cuts out with his chelae and holds over himself with his hind legs as he scuttles about in the coral pools of the Great Barrier Reef. Zoologists call him *Cryptodromia tumida* which might be somewhat loosely Englished as, "fat-little-fellow-who-hides-while-he-runs."*