PHYSIOLOGY

Gland Transplants May Depend on Genetics

GENETICS may play an important part in the success of gland transplantations, it appears from studies reported by Drs. Hugo W. Nilson and Dwight J. Ingle of the Mayo Foundation, Rochester, Minn. (*Science,* Nov. 6.)

Adrenal glands, important little organs lying above the kidneys, were used in the studies. These glands were "exchanged" by transplantation between sister rats. These rats all lived and 60 days after the operation the glands were found to be in good condition and functioning normally. Similar exchange of adrenal glands between rats of different strains, cross-strain transplantation, was made on other rats. All of these animals died within 60 days after the operation. The cause of death was insufficient supply of the vital hormone of the adrenal glands.

Science News Letter, November 21, 1936

PUBLIC HEALTH

Conquering Diphtheria Involves Continuous Fight

CONQUERING diphtheria is not a static affair. Getting the upper hand over the disease by protective vaccinations of children is one thing. Keeping it is another. Even those communities with enviable records of large numbers of school and pre-school children immunized against the disease need to be constantly on guard against this horrible killer.

Up to now the fight has been carried on along the line of endeavoring to test all children, before they start to school, for susceptibility to the disease, and giving toxoid or toxin-antitoxin to those children found susceptible to diphtheria.

The next step is to retest the susceptibility of the children after a few years. The need for this retesting is brought out by Dr. Henry F. Vaughan, Commissioner of Health of Detroit, in a report to the *Detroit Medical News,* official publication of the Wayne County Medical Society. (Nov. 9.)

Protective treatments will "control diphtheria," Dr. Vaughan declares, but in a fair proportion of treated children, the protection does not last for life.

"Since September 1 there have been reported 63 cases of diphtheria in Detroit," Dr. Vaughan states. "At the present time there are 35 cases under quarantine. These are more cases than we have had at this time of the year during the past several years. Of the current cases about three out of four are among school children.

"Three doses of toxin-antitoxin, two doses of simple toxoid, or one dose of alum precipitated toxoid does not imply life-long protection. There is plenty of evidence to indicate that as many as one-third of the children will lose some of their protection within five or six years. The only way to be sure whether the protection remains is to give the Schick test."

The Schick test is the one which shows whether or not a child is susceptible to diphtheria.

Science News Letter, November 21, 1936

PHYSIOLOGY

Can Extend "Prime of Life" by Suitable Diet

OLD AGE can be held at bay and life itself prolonged some seven years by dietary means. Evidence for this has been obtained in nutrition studies with rats, made by Dr. Henry C. Sherman, Mitchill professor of chemistry at Columbia University and research associate of the Carnegie Institution of Washington.

The diet which extended the prime of life in rats had an increased proportion of milk, making the diet richer in vitamins A and G, calcium and protein, Dr. Sherman reported in a lecture at the Carnegie Institution.

This diet "expedited growth and development, resulted in a higher level of adult vitality as shown by several criteria, and extended the average length of adult life, or improved the life expectation of the adult."

Extension of life expectation has heretofore been made for lower age levels by hygienic means which reduced the chances of death by diseases of infancy and childhood. By applying the new knowledge of nutrition, Dr. Sherman believes it is now possible to extend life during "the period of the prime."

Because eminent men usually attain their positions of "fullest opportunity" at an age when only the last third of their years remain to render "fullest service to the world," Dr. Sherman believes that the possibility of extending the prime period of life has greater than biological significance.

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IN SCIENC

RADIO

Liner Uses Beam Radio To "See" Through Fog

LITTLE mentioned and still in experimental use on the S. S. *Normandie* are ultra-short radio wave devices which can detect fog-obscured obstacles in the path of the vessel up to a distance of four and a half miles.

The French society of radio electrical engineers developed the experimental equipment which looks like two searchlights mounted about twenty feet apart.

What appear to be searchlights, high on the forward part of the *Normandie,* are in reality the transmitting and detecting mirrors of the ultra-short radio waves. Idea behind the apparatus is that the radiation emitted in a beam will strike the obstacle ahead, and that the small part of the reflected energy will be detected by the receiver in the other mirror.

The special vacuum tube wave generator produces radio waves whose length is only 12 centimeters or about five inches.

Science News Letter, November 21, 1936

ARCHAEOLOGY

Digging at Kish Reveals International Trade

EVIDENCE that international trade began before 3000 B.C. has been unearthed in the ruins of the Babylonian city of Kish.

The discovery, made by the Field Museum-Oxford University Joint Expedition to Mesopotamia, consists of pottery objects of highly polished fine black ware. This black pottery is pronounced identical with ware made in ancient times in Anatolia (modern Turkey) and in northern Syria.

Even more distant trading at Kish with cities of India over a thousand miles away is shown by finding decorated stone bowls like bowls from ruins of Mohenho-daro, India, dating between 3000 B.C. and 2800 B.C. Beauty figured in the early international trade, it appears, for two cosmetic jars of alabaster, unearthed at Kish, are identified as links with Persia.

Science News Letter, November 21, 1936

E FIELDS

CONSERVATION

Want to Buy a Bison? Uncle Sam Will Sell

DO YOU want to buy a bison? Or a real, live elk?

If you do, better get your order in soon. Uncle Sam is conducting another of his annual sales of surplus big game animals. The Biological Survey, U. S. Department of Agriculture, is acting as salesman, and can give further information to all parties interested.

These annual sales, which have become a more or less regular institution, are conducted to lighten the load on the various big-game ranges in the West, which can support only herds of definitely determined sizes. If any unsold animals are left after a suitable time, they will be given free to public or private institutions for propagation or exhibition. But these gift animals are not scot-free: the recipient has to pay costs of capture and delivery.

Science News Letter, November 21, 1936

DENDROLOGY

Painstaking Scientist Counts Needles on Pines

REMINISCENT of the Biblical dictum, that "the very hairs of your head are all numbered," is the tedious but scientifically and practically significant task of counting all the needles on two pine trees, recently completed by Dr. A. L. MacKinney, silviculturist of the Appalachian Forest Experiment Station at Asheville, N. C.

Dr. MacKinney and assistants have just completed an extensive study of pine trees. He made the painstaking needle-count, together with other studies, with the aim of finding out how bigger profits can be made from growing timber.

Dr. MacKinney discovered that pine trees, in so far as their needles are concerned, are like men's heads—some have thick growths and some are almost bald. For his experiment he selected two loblolly pines. Both trees were 66 years old. The first tree measured twelve inches in diameter, and was 34 feet from the bottom limb to the top. The other tree was ten inches in diameter, was 69 feet tall and 17 feet from the first limb to the top.

The first tree had 325,000 needles and the other had only 30,000 needles. The first tree had nearly 4,000 square feet of leaf surface which, if spread out, would have covered the floors of 25 ordinary rooms. The needles, if laid end to end, would have extended more than 15 miles.

Dr. MacKinney explained that much of the food for the pine tree is manufactured in the needles. These thousands of needles, he said, could not make the food for the tree unless they were exposed to the sun, and thus the amount of leaf or needle surface exposed to the sun determines the growth and health of the tree.

Therefore, he explained, trees that grow out in the open like an apple tree in an orchard furnish more cubic feet of wood than those which grow in dense stands.

Science News Letter, November 21, 1936

HOROLOGY

Twin Microphones Quickly Test Accuracy of Watches

AN ELECTRIC "stethoscope" which listens to the beats of watches and registers on a visible dial whether the watch being examined is running fast or slow, is described in a patent (No. 2,050,866) granted to R. Tamm, of Berlin, Germany.

The stethoscope is designed to do away with the present time-consuming method of testing watches, which sometimes involves many adjustments and a week or more before a high degree of accuracy is obtained.

By means of two microphones, one of which is placed over the standard watch known to be accurate, and the other over the watch to be tested, the stethoscope listens to the watch ticks. Picked up by the microphones, the beats are amplified and set up corresponding fluctuations in an electric system which acts as an analyzer.

If the deflection of the needle in the device increases as shown by a dial, it indicates the watch under test is running fast or gaining time. If it decreases, the watch is running slow.

Big advantage of the stethoscope is that adjustments can be made in a few minutes, whereas conventional testing may require 24 hours or more.

Science News Letter, November 21, 1936

PHYSICS

To Test Prison Bars by Their Magnetic Behavior

NEWEST aid of science in combating crime is the magnetic apparatus developed at the National Bureau of Standards to test the properties of tool-resisting prison bars. The device was developed by R. L. Sanford, senior physicist at the Bureau, at the request of the Bureau of Prisons and the Department of Justice.

At the meeting of the Philosophical Society of Washington Mr. Sanford showed how a non-destructive test on prison bars had been achieved with his alternating current magnetic comparator. Usefulness of the device will be to test new bars purchased by the Federal government for prisons.

Prison bars, disclosed Mr. Sanford, are really two bars blended into a solid whole. Outside is softer ordinary steel which can be cut with a hacksaw. But within are inserts of hardened steel that cannot be cut by any tool which a prisoner is likely to obtain.

This dual type of construction of bars is necessary because the inner, very hard, steel is brittle and if used alone might be shattered by a sharp blow in quite the same way that one may break the blade of a knife if it is used as a screw-driver.

In the prison bars the outer, softer material absorbs the shock of a blow and protects the inner, hard material from fracture. Moreover, the outer steel is an excellent heat conductor and prevents the prisoner from heating the inner steel if he employs a home-made blowtorch consisting of a candle and a soda straw.

The prison bars are tested in a balanced electrical circuit which can be thought of roughly as an electrical scale in which the magnetic properties of a standard and test sample of steel are compared.

Primary premise behind the device, stated Mr. Sanford, is that two steel bars which are alike chemically and structurally will be alike, also, in magnetic properties. And that it is impossible to do anything to a piece of steel which will change its strength without, at the same time, altering its magnetic properties. Thus, if one finds that the magnetic properties of the sample correspond to those of a known, approved standard the two are otherwise alike also.

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