

SCIENCE NEWS - LETTER

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EDWIN E. SLOSSON, EDITOR HOWARD WHEELER, MANAGER

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GLANDS AND REJUVENATION

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(Written especially for Science Service)

(Dr. Harrow is a recognized authority on the glands of the human body and their effects. He is author of the recent book "Glands in Health and Disease". In this article he makes plain the methods of rejuvenation that are now being practiced.)

Old men, Mr. McCormick among them, wish to become young again; or at least they long for the strength and vigor of youth. Hence the widespread interest in the possible methods for "rejuvenating" the body.

Why do we become old? Why is our cycle of life so limited in years? Why do not the processes of digestion, absorption, assimilation and repair go on indefinitely? In the early stages of his existence, and for a number of years, man is capable of replacing worn-out tissues; why can he no longer do that when he becomes four score and ten? There have been endless theories to explain the old-age puzzle.

The more modern work on the subject was ushered in by Brown-Sequard, a Franco-American, who in 1889 brought himself into the limelight with the statement that he had fed himself with extracts obtained from the sexual organs of a ram, and that as a result, had become quite "rejuvenated". His seventy years sat lightly on his head. He felt not more than one-half of seventy.

Paris began to hum with this piece of sensational news and it quickly traveled around the globe. But repetitions of Brown-Sequard's experiments were disappointing, and his idea that the vigor of the genital glands determined the vigor of the entire bodily structure, fell into disrepute.

Within the last few years the subject of rejuvenation has come to the front again, largely owing to the work of Professor Steinach of Vienna, and Dr. Voronoff of Paris. These men believe with Brown-Sequard that there is something in the reproductive system which profoundly influences the general mental and physical make-up of the body; but they maintain that feeding extracts of reproductive organs is useless, since they undergo changes before they can reach their destination.

On the other hand, surgeons have had sufficient experience with transplanting organs to make testicular grafting a feasible undertaking.

Steinach transplanted the sexual organs of young rats to the system of old ones, and found that not only could the life of these rats be prolonged, but much of the strength of their youth restored to them. Voronoff did the same thing with rams, with much the same result. Rams, ten to twelve years old, corresponding to about 80 years in man, had their glands replaced by those obtained from a group of younger animals. The transformation, according to Voronoff, was little short of marvellous. He went a step further and showed that just as soon as the transplanted organ is removed, the animal returns to its original condition.

More recently Steinach has hit upon a simpler operative technique, which does away with the necessity of organ transplantation altogether. In principle it depends upon the fact that of the two types of secretion developed by organs of reproduction, but one, that produced by the so-called "interstitial cells", plays a role in rejuvenation. Steinach found it possible to multiply the activity of these cells by what appears to be a comparatively simple operation. However, Voronoff is of the opinion that the transplantation of organs is a much better method, and presumably the surgeon who operated on McCormick is also of that opinion.

But we must be very cautious in interpreting results. We must adopt the attitude of the experimental worker who is not only creative but extremely critical. So far these "rejuvenation" experiments are in their infancy. The experiments that

have been performed have been mainly on animals . Steinach, to be sure, has performed the operation on a number of men, and so have a number of Chicago doctors; but the time that has elapsed since these operations were performed has been short, and we have no way of foretelling the post-operative changes at the next few years. We are all too familiar with the successful operation that has sent the patient to a speedy grave, due, let it be emphasized, through no fault of the surgeon.

FROM COMPLEXES TO GLANDS

By Dr. Edwin E. Slosson

How swiftly the spotlight of popular interest shifts from one part of the stage to another! The eyes of distressed humanity turn eagerly toward any quarter that appears to promise health and happiness.

A few years ago psycho-analysis was all the rage. Now endocrinology is coming into fashion. Those who recently were reading Freud and Jung have now taken up with Berman and Harrow. Those who formerly were rushing to have complexes extracted are now anxious to have glands implanted. Away with psychology! Rah for physiology! Anything hailing from Vienna is bound to boom.

As fads there is not much to choose between them. Popular expectations always run far ahead of the march of sober science which must make sure of every step as it goes. Both these have a certain foundation of fact and promise much for the future though neither can fulfill the anticipations of the public at present.

But the scientific basis of the glandular idea is much more solid and substantial. An emotional complex is after all a figment of the imagination, but when you get out a chemical compound, extracted, purified and identified, you have hold of something tangible and when you put it back into the patient you can regulate the dose and record the reaction.

The psycho-analyst may be able, as he boasts, to "pluck from the memory a rooted

sorrow", but another will grow in its place so long as the soil remains the same. The morbid idea once eradicated reappears, transformed or transferred, as often as it is ousted. None of us can avoid shocking experiences, disturbing thoughts and repressed desires but they need not annoy us persistently unless the chemistry of the body is out of kilter. Any splinter or scratch will fester if the bodily system is unsound but severe wounds will soon heal if the composition of the blood is all right. There are microbes everywhere but we do not catch all the diseases we can. It is the same with mental microbes. A psycho-analyst may interpret your dreams as he likes best but a doctor can give you any kind of dreams you want by a dose of hashish, strychnine or opium or you can get dreams that you don't want by an untimely mince pie or an unruly Welsh rabbit.

Physiologists now lay many bodily disorders, as capitalists do industrial disorders, to the pernicious activity of "agitators". The physiologist, since he prefers to talk Greek, calls them "hormones", but the word means the same. At least a half dozen of these hormones are already known. They are marketed among the four hundred by-products of our packing houses. Two of them, thyroxin and adrenalin, are definite chemical compounds and can be made synthetically. Soon the chemist will capture them all and possibly he may make stronger and better ones than the glands turn out in their old fashioned way. There may be giants on the earth in those days, such as Wells foretold in "The Food of the Gods".

These hormones determine our temper and our temperament. They decide whether we shall be tall or short, thick or thin, stupid or clever. They mold our features and control our characters. A minute amount of certain secretions will make one more masculine or feminine, older or younger.

But until the chemist can manufacture them in the laboratory and we can carry them in a vest pocket case we are dependent upon more or less active and impure extracts from the glands to supply our functional deficiencies. Or - and this is the latest sensation of the hour - we may be grafted with a gland from some

animal. Unfortunately, the glands of the lower animals do not set well in the human system. Those of the apes work best, which goes to prove that they are blood relations of ours, Mr. Bryan to the contrary notwithstanding. In any case the relief is not likely to last long, for the borrowed gland may succumb to the same influences that invalidated the natural organ.

In spite of the startling experiments of Voronoff and Steinach on the rejuvenation of rats and sheep, science is not yet in a position to meet the old demand for an Elixir of Life. Dr. Brown-Sequard of Paris, who thought thirty years ago that he had found something of the sort in an extract of goat glands did not live long enough to demonstrate his discovery. The rich old man, who went to Vienna to regain his youth and came to London to prove the success of Steinach's operation, died on the eve of his lecture on "How I Was Made Twenty Years Younger."

But there will be plenty of people eager to try the new methods, urged by the same motive that drove Ponce de Leon to seek the fountain of immortal youth in the vicinity of Palm Beach.

DISCOVER MYSTIC SHRINE FOR PRE-HISTORIC RITES

Washington, Discovery of a shrine and other unique ceremonial objects used in the mysterious rites of a people believed to be older than the ancient cliff-dwellers has been made by Dr. J. Walter Fewkes, Chief of the Bureau of American Ethnology, in excavations near Far View House in the Mesa Verde National Park, Colorado, according to information received by the Smithsonian Institution here.

These finds are the result of the field work just begun and are expected to be followed by others which may throw more light and add much to the knowledge of the culture which is buried in the past.

The most striking result of the digging is a shrine on a raised dais on the floor of a large ceremonial chamber. On this shrine idols, fetishes, prayer sticks, platter with corn, tobacco, etc., were found, as well as twelve well preserved clay pipes unlike anything ever before found in these ruins. Two vases, one representing a four-legged animal and the other a duck are also among the exceptional archeological collections made. In a room barely five feet long beautiful decorated pottery radically different in ornamentation from that of the cliff-dwellers was found and the indications are that this ruin belongs to an epoch older than that of the cliff-dwellers.

BANG! SPUTTER! Hooray
FOR THE FOURTH OF JULY

Fourth of July is spelled "fireworks" to the average boy and girl, even in these days of safety first Fourths.

Though there will be a bombardment of illicit fire crackers in spite of prohibition, even dad and mother will join the children in burning the legitimate sparklers after the sun has finished his display for the day.

Pyrotechnic displays are much older than this country and Independence Day. The Chinese are thought to have used fire displays in very ancient times, while it is certain that fireworks were used in the Roman circuses. By the sixteenth century court functions in Europe were often celebrated by fireworks displays, and later every great national celebration had its special fireworks.

While the first pyrotechnics probably consisted of bonfires, soon entertainers and the players of those days began to devise flame and fire exhibitions. In modern days the fireworks makers have profited by the knowledge that the chemists and other scientists have produced.

Black gunpowder, the explosive that reigned supreme until the more complex and powerful smokeless variety supplanted it, is the basis of fireworks that make a noise. The firecrackers that are fast being outlawed are nothing but little paper or pasteboard bombshells. About the only way in which the modern chemist has aided in their manufacture is by providing a better and cheaper crimson dye to color their wrappers.

Gunpowder is made up of about 75 parts of saltpeter, 15 parts of charcoal, and 10 parts of sulphur. Saltpeter is potassium nitrate, and in black powder it furnishes the finely-powdered charcoal with an immediate source of oxygen. When the carbon of this charcoal and the oxygen unite they explode, much to the delight of the small boy, and often to his harm. The sulphur acts as a regulator of the rate of burning, as well as contributing to the combustion.

Incidentally, the first real recipe for gunpowder is recorded in an anagram by Sir Roger Bacon, whose other manuscripts, which were recently discovered and deciphered, indicate even more advanced scientific knowledge.

But in the colored fires and sparklers of the more quiet celebrations a greater variety of the chemist's materials are used. The sparks of the sparklers are tiny

bits of iron or steel that shoot out into space when they become heated. Magnesium, one of the lightest of our metals, which is the stuff that flashlight powders are made of, provides the bright light of the sparklers and the flares.

Celebrating youngsters are armed with safe pistols, loaded so as to fire a fabulous number of times. A mixture of a rare metal cerium with about one-fifth iron, when it is struck by pulling the trigger sends a stream of harmless sparks out of the tin barrel. Though this is a new toy, it operates the same as the cigar lighter or gas lighter that father or mother use..

Different kinds of metals provide the color of fireworks. The sodium that common table salt contains gives an intense yellow flame, and the metal strontium is responsible for most of the red light. Barium salts or the metal itself give green light, as does copper and its salts, such as copper sulphate, commonly known as blue vitriol. This latter compound, by the way, is the stuff that is sprinkled on the winter's logfire to produce green flames.

The world war gave an impetus to fireworks manufacture when the chemists and powder experts strived to devise more powerful incendiary material, more dense smoke-producing chemicals and better visual signalling materials. But planned to destroy and to baffle, the thermit bombs and the smoke pots of war hardly fit into the modern celebration of the Fourth.

RUSSIAN SCIENTISTS TO GET AMERICAN SCIENTIFIC LITERATURE

Washington, D. C. - An American Committee to Aid Russian Scientists With Scientific Literature has been formed here to supply Russian men of science with the results of American scientific work accomplished since 1914.

This committee consists of Dr. Vernon Kellogg, secretary of the National Research Council, Chairman, Dr. L. O. Howard, chief of the Bureau of Entomology of the Department of Agriculture, Dr. David White, chief geologist, U. S. Geological Survey, and Dr. Raphael Zon, chief, forest investigations, U. S. Forest Service, and it has arranged with the American Relief Administration to receive contributions of scientific literature at New York and transport them to Russia.

The American committee is a voluntary and temporary organization of scientific men and it has no money for the purchase of scientific books, periodicals or papers. It has therefore called upon publishers, societies and individual authors to contribute copies of their publications to scientific institutions through their organ-

ization.

appeals

Through many sources/are coming from Russian botanists, "zoologists, chemists, physicists, geologists, engineers, and others for the recent literature in their respective fields. The craving of these men for contact with the rest of the scientific world is very great.

The committee desires chiefly to obtain scientific books, scientific periodicals, author's reprints, publications of government and state scientific bureaus, scientific institutions, and university presses which are of an original scientific character or contain technical information, and which have appeared since 1914.

There is in Russia a fairly large number of scientific institutions. It is out of the question at the present time to undertake to supply adequately all those institutions with literature, but the Committee hopes to provide at least six copies of each publication, since it feels that this number may meet at least the more urgent needs of the Russian centers of scientific endeavor at Moscow, Petrograd, Kazan, Kiev, Odessa, and a few other principal university cities.

CONSUMERS SHOULD INSIST ON CLEAN COAL, SAY ENGINEERS

Atlantic City, June 29.- "The cost of commercially clean coal is so slight in comparison with the increase in value to the consumer that cleaning should be insisted on in all cases," E. E. Ricketts told the American Society for Testing Materials meeting here in an address in which he discussed "A Rational Basis for Coal Purchase Specifications".

"Coal as it occurs in the ground," he said, "is not a pure substance but contains veins or pockets of foreign substances which, if allowed to remain in the coal, materially decrease its value to the consumer. To a considerable extent these foreign substances can be removed by the installation of suitable apparatus at the mine.

"The apparatus necessary to remove the larger impurities such as sulfur balls, parting veins and portions of the roof and floor is slight. In many cases by the use of a more costly system the percentage of impurities can be still further reduced."

BUFFALO COMES BACK; OVER 10,000 NOW ALIVE

Washington. The buffalo is coming back. The picturesque animals which once thundered across the prairies in such vast herds but which are known to the present generation chiefly by the figure on the five-cent piece are now over five and one half times as numerous as they were twenty years ago, according to Dr. T. S. Palmer of the U. S. Biological Survey.

In 1902 when Congress made the first and only appropriation of \$15,000 for their purchase and maintenance, there were only 1,750 of these ox-like animals alive. Now there are over 10,000 in existence, 6000 in Canada and approximately 4,000 in the United States. There are 1,250 in the nine U. S. Government herds alone and all but about 130 of these were born on the reservations. The largest herd is in the Yellowstone Park and is made up of 506 bison. Montana Bison Range has 388, the Wichita Preserve 128 and Wind Cave 71.

The members of one herd calmly chew their cuds in the Zoological Park at Washington, within sight of the place where their ancestors were first seen in the East by white men in 1612.

Whatever of romance in regard to the America buffalo may have vanished with the passing of the old West, the life history and breeding of these animals are still a mystery to the biologist.

Just how old a buffalo gets to be is not known. As far as the records show, the Methusaleh of the species is one in Paris which is said to be 31 years old. The oldest buffaloes in the Government herds are a venerable cow on the Wichita Preserve now 24 years old and Kalispel Chief, the leader of the Montana herd, now 20 years old.

It is known that the cows begin to breed in their third year. When they stop is a biological mystery. There is a record of a cow breeding in her twenty-sixth year and one on the Wichita Preserve had a calf at the age of 22. The normal number of calves and the exact ratio of sexes are likewise unknown.

NEWS OF THE STARSComets Expected and Unexpected

By Isabel M. Lewis,
of U.S. Naval Observatory.

(Science Service)

Astronomers have had their telescopes all set for eight periodic comets due to arrive this year but none of the expected visitors have put in their appearance up to now. Two unannounced sky-travellers have come into view, however, and both have been spotted by the Cape of Good Hope Observatory in Africa.

The latest find is Skjellerup's comet which the Cape astronomers report they located on May 17. They considered it new and heretofore unseen. But shortly after they sent the news of their discovery to American astronomers, Prof. A. O. Leuschner of the Students' Observatory, Berkeley, California, declared that the orbit of the comet as computed by Prof. Crawford and Meyer of his staff shows that it is very similar to that of Grigg's Comet of 1902. Astronomers now believe that the two are the same object and that the name Skjellerup must be simplified to Griggs. Future returns of this comet are to be expected, though like all short period comets it is a faint object and will be visible only in the telescope. It is now passing rapidly through the northern heavens from Canes Venatici into Ursa Major just below the handle of the Big Dipper.

The first comet of the year, called the Cape Comet, was discovered on January 20 and was later found on a photographic plate taken with the Bruce telescope at the Yerkes Observatory. It has remained a telescopic object, being at no time brighter than the tenth magnitude.

Of the eight comets that may return in 1922, Brorsen's short-period comet has not been seen since 1879 and Barnard's comet known as 1884 II has not been found at any of its returns since 1884, so it is improbable that either of these comets will be found this year.

De Vico's and Brorsen's long period comets which are members of Neptune's family of comets and have periods of about seventy-five years are expected this year but

there is an uncertainty of several years in their periods.

Metcalf's comet, 1906 VI, has a period of 7.6 years and so is due this year but its elements also are uncertain. Taylor's comet, 1916 I, is due to arrive at perihelion the middle of June but as it will be on the far side of the sun it is poorly placed for observation and it is not likely that it will be discovered.

Daniel's comet, 1909 IV, was not seen at its return in 1916 when it was unfavorably placed for observation but it is expected that it will put in an appearance the later part of this year. It is due at perihelion in October and will be in excellent position for observation by September.

Perrine's comet, 1896 VII, with a period of six and a half years is also due at perihelion this fall and should now be in the constellation of Perseus passing later in the year into Auriga and Gemini. When at perihelion on October 1 it will be ninety degrees from the sun and about half as far from the earth as from the sun and should be picked up without any difficulty by that time.

At least two periodic comets, then, will be most favorably placed for observation this fall and there is a possibility that two or three more periodic comets may put in an appearance before the year is over, aside from the possibility that additional new comets may be discovered.

WISE FARMERS MAKE
MONEY FROM NUTS

Washington. Native nuts, not the two-legged variety locked up and at large, but the kind that grow on trees, are very valuable farm by-products which should be cultivated so as to produce the best quality in the largest quantities, says the U. S. Department of Agriculture.

Black walnut, hickory, and pecan trees are of economic importance on account of the nuts produced as well as for the woods. Every tree intended for quantity production of nuts should have plenty of space. Trees should be spaced from 60 to 100 feet apart. A fertile soil that is reasonably moist is best and well drained clay loam the most desirable. Nut trees do not come true to seed and the only way to reproduce a variety or an identical type is by grafting or budding.

SAILORS SEE STRANGE
SIGHTS AT SEA

Washington. Sailors steaming through the wet waters of the sea observe many strange things beside sea-serpents. According to the U. S. Hydrographic Office some queer mirages have been reported recently.

When Second Officer P. W. Fenton of the British steamer Ikala looked across the smooth sea under an almost cloudless sky toward the hazy horizon to the southward, as the ship headed up the English Channel, he saw inverted vessels with their funnels resting on other vessels, and outlined with distinctness in every detail. Blinking, he turned and looked northward. There the vessels were stacked one on top of the other three or four high but not inverted. Swinging around and looking eastward, he found the vessels appeared to have normal hulls, but that the masts and funnels were extended upward as much as an altitude of 10 or 15 degrees. These three forms of mirage remained the same for about six hours.

Officers of the American steamer Half Moon observed what appeared to be a huge area of ice with breakers plainly visible dashing against its side. The nearest reported ice field was about 340 miles north-northeast of the ship.

SNAKE BITE REMEDY
FAILS AS MOTH STING CURE

Chicago. The old proverbial remedy for snake bite current in the antevolsteadian age will not kill the poison which a stinging caterpillar introduces into its victim. Hollow, barbed, needle-pointed shafts of the caterpillar, called nettling hairs, may be blown in the air and lodge on the skin, according to the Journal of the American Medical Association. These will cause an objectionable rash without any contact being had with the caterpillar itself.

The nature of the venom which is stored in sacks at the end of the little hair-like spines is not known, but it seems to be soluble in alcohol. Thus alcoholic fluids would tend to spread rather than stop the rash. The application of an alkali relieves the sensations produced by the stings of bees, mosquitos and the caterpillars but it does no good in the case of the moth rashes.

SCREW MAKERS SETTLE
PUZZLING PROBLEM

Washington. - How long is a wood screw? The question as to just what part of the simple little threaded cylinders, familiar to every man, woman, and child in the country, should be counted in determining their length has hitherto been a subject upon which manufacturers have differed, but the Department of Commerce has brought together eight of the leading makers who have finally fastened the measurements so that they will no longer be subject to varying twists.

Some of the manufacturers have been counting only the shaft below the head in giving measurements of the flat top screw and some have been figuring the full length of the rounded top kind. Now, however, it is agreed that the length of all kinds of screws shall be measured from the largest diameter of the bearing surface of the head to the extreme end. In other words, the length of the shaft of the rounded top sort and the full length of the other kind will be the standard upon which measurement is made.

DRIFTS FOR HOUR IN FREE BALLOON
THEN LANDS IN EXACT SPOT LEFT

Washington. Drifting for miles in a free balloon might seem to offer little prospect for a landing again on your own doorstep. But an accommodating air current and a little head work turned this trick for Junius P. Smith of the Army Air Service at Langley Field, Virginia. His experience is unique in lighter-than-air work. Carried off in one direction by the wind, the aeronaut ascended until he struck a calm. Figuring that the calm was caused by two strong air currents moving in opposite directions, he threw out ballast, rose above the calm, caught the current moving swiftly in the direction opposite from which he had come. After riding at his pleasure in that direction, he descended and caught the first current again and returned to the exact spot on the field from which he had arisen.

RADIO NEWS OF THE WEEKMINING INDUSTRY AFFECTED BY
RADIO POPULARITY

New York, - The mining industry of the country in certain quarters is being affected by the widespread extension of the use of the radio telephone. The supplying of crystals of certain ores has become a small industry in itself.

These mineral crystals are used as detectors that transform the pulsating electrical vibrations received by the antenna into those that can be converted into sound waves by the telephone receiver. The bright cubical crystals of galena, a compound of sulphur and lead, is a favorite detector, and pyrite or chalcopryrite, the first combination in chemical form of sulphur and iron and the other, sulphur, iron and copper, are also used. Not all crystals of these minerals will detect radio messages with clearness. A demand for suitable crystals has caused the mining operators to search over their ores and to submit perfect crystals for the radio manufacturers. Meanwhile there is a constant search for a dependable supply of the best material.

Few amateur radio enthusiasts, probably, are aware that there is one material in the many pieces of apparatus that cannot be replaced by any substitute that scientists have yet discovered. This material is mica, a mineral substance found in nature that has unique dielectric properties; that is, it resists the passage of electricity even at remarkably high voltages. It seems unbelievable that thin sheets of this transparent material, only one thousandth of an inch thick, can successfully perform this necessary function.

The market for copper which has been very poor has also felt the effects of increased demand due to the extensive use of copper wire and brass in the manufacture of radio outfits. It is estimated that each radio receiving set requires at least two pounds of copper in its manufacture.

EDITORIAL

The Way of Life

Life moves too fast for most men. They look forward eagerly to the straw of youth held out to them in accounts of rejuvenations by glands. Though men wish to grow old slowly, they have little mercy on the animal, vegetable and inorganic things that serve them. They try supplying more carbon dioxide to plants in order to speed up their development. They subject them to continuous artificial sunshine and electrify them into more rapid growth.

Hens that work hard and produce an egg nearly every day are prized while the roosters go to an early fattening and death. In a few seconds the factories that make the comforts of men use the heat and power of coal that it has taken centuries of growing luxurious vegetation to store. The iron, copper, zinc, lead, tin, and other metals that were laid by during long stretches of geologic time are further concentrated and used. Naturally most of mankind feels that the world was made for him; only a few of the species are looking forward to man's future evolution and the needs of his posterity. And yet it may be that many future generations will struggle for the elixir of eternal life without achieving it, just as the man has dreamed of lead into gold and eternally getting something for nothing.

We hear murmurs of protest from the women and one waits breathlessly for militant feminism over the unfairness of medical science in rejuvenation by glandular operations. From the nature of things most of the experiments have been made on the male of the species. But from the general impressions of the times it would be said that women have the greatest horror of old age and the accompanying loss of beauty.

EDITORIAL

Wireless Short Waves

It seems probable that the rude person will point his wirelessly voice at you a few years in the future just as he does his finger now. Marconi has laid aside his Martian ambitions for a time and has been experimenting with short radio waves only a meter or so long. And he has succeeded in reflecting them and sending them out like a beam from a searchlight. This fact does not seem so strange to a physicist; he knows that light is easily reflected and he also appreciates, what many people only know, that light waves and radio waves are exactly the same in kind and differ only in length. Just as the spark set has been replaced by the C. W. transmitters, just as the radio telephone has the telegraph on the run, so instead of broadcasts on 360 and 485 meters, short waves aimed at you may carry radio messages of the future. Ten years from now the present-day radio apparatus will be as obsolete as a tallow candle. Marconi, father of wireless, looks upon the habits and practices of his growing child and says it ought to improve much more. Business men had better put the depreciation of their radio equipment at about 50 per cent a year.

DO YOU KNOW THAT -

The total electric power now generated by all the hydro-electric plants in Italy is 1,191,797 horsepower or just a little more than the amount that Marconi claims would be necessary to send a radio message to Mars.

One-tenth to one-seventh of all cloth now manufactured in Germany is made of cotton waste.

Argentine frozen meat in Germany and fresh California fruits and vegetables in China are the result of new cold storage systems which have been installed on Atlantic and Pacific steamers.

Experts estimate that there are nearly fifty million tons of the great soil fertilizer, phosphate of lime, on the tiny island of Nauru in the Pacific just south of the Equator. This island was formerly German territory but was taken over under mandate by Great Britain, Australia, and New Zealand.

DO YOU KNOW THAT -

Irrigation and impounding water upon a large scale increases the amount of rainfall in the neighborhood to a marked degree, meteorologists claim.

The sycamore makes a good city shade tree because it will withstand the smoke nuisance so detrimental to plant life.

Leonardo da Vinci, the artist who painted the Mona Lisa, the world's most famous picture, was also a military engineer and wrote articles on aeronautics.

A company has been organized in France to produce paper pulp from alfa grass found in large quantities in Algeria and Tunis.

DO YOU KNOW THAT -

In Tokyo each street car bears the number of its route and inside is a comprehensive map of the city circled by lines of many colors corresponding to the numbered routes. The tourist finds his way by merely matching colors.

The coastline of Queensland, Australia, is more than 2,200 miles long and is equivalent to that of the Eastern United States from northern Massachusetts down the Atlantic, around Florida and to Mobile.

The first known ancestors of Man-of-War and Morvich were not much larger than cats and had four toes in front and three behind, but their habit of getting up on their toes developed the hoof which is really just toe nail.

It is estimated that there are 100,000 miles of canals in China.

DO YOU KNOW THAT -

Fuel briquets are believed to have first been made in Germany in 1594, but were never made or marketed commercially in the United States until about 1890.

The only commercial sources of diamonds in the western hemisphere at present are Brazil and British Guiana.

The Florida College of Agriculture is holding a series of schools to teach the control of watermelon diseases which it is estimated will destroy \$300,000 worth of this year's watermelon crop in that state.

Infant diarrheal diseases increase in almost direct proportion to the temperature, according to examinations of children in two Pennsylvania towns.

DO YOU KNOW THAT -

A firm in Germany has applied for patents on a clock which is to be corrected, set, and wound by means of an aerial loop radio receiver.

It has been estimated that in 1936 there will be a total consumption of 438,000 tons of inorganic nitrogen in this country.

Cultivation of the soy bean, of which there are more than 1000 varieties, has been developed in China to such an extent that it now represents the principal agricultural industry of that country.

The oldest public railroad in the world is the one which was opened September 27 1825 between Stockton and Darlington, England, and is still running.

DO YOU KNOW THAT -

The 600 mountain lions in California kill 30,000 head of deer every year, over twice the number killed by human hunters.

In Palmyra, Syria, there is a flying physician who locates and visits his patients among the wandering Bedouin tribes by means of an aeroplane.

American, British, French, and German wireless companies have formed a pool to establish one large station in Argentina.

In the plantless depths of the ocean, the animals largely depend for their food supply upon the ceaseless rain of dead animalcules which sink through the miles of dark, cold water.

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Of the origin of life we have, in the nature of things, as yet no definite knowledge; but everything points towards this conclusion - that during the gradual cooling down of this planet a state of affairs arose which inevitably led to the production, in that cosmic laboratory, of molecules which were alive in that they had the power of reproducing themselves and reacting to stimuli, and gave rise to the living things that we see today; in other words, that there has not only been an evolution of all living things from one common ancestor, but of all life from not-life. - Julian S. Huxley.

The best possible preparation for sane thinking is to learn how to do things well. - Dr. Stewart Paton.