

Dr. Abel's researches resulted in the discovery of the pure principle of adrenalin and recently he and his collaborators, Drs. Chas. A. Rouiller and E.M.K. Geiling, have isolated a very powerfully acting hormone from the pituitary gland, an organ controlling the functions of growth.

To the uninitiated eye the artificial kidney looks very much as though it had been built after the general design of a steam boiler but in reality it is made in imitation of the filtering mechanism in the kidneys of higher animals which is known as the glomerulus. On the interior of the artificial kidney are tubes of celloidin, a substance that lets the impurities and poisons strain through but retains in the blood the vital corpuscles and proteins. The leech extract, hirudin, is used to keep the blood from clotting as it flows through the tubes.

The apparatus is attached outside the body to an artery and the blood flows back again to another connection further along on the artery or to a vein. Any filterable constituent of the blood which must not be removed, such as blood sugar, is prevented from escaping through the walls of the celloidin tubes by the fact that they are submerged in a solution that contains the same amount of this substance as the blood.

Already the kidney has been tested on dogs with the result that it was found to operate so rapidly and efficiently that the living kidneys did not secrete and were relieved of their work so they could rest. The hope of applying it to the relief of human sufferings lies chiefly in the field of cases where the kidneys break down in fatal cases as ⁱⁿ acute nephritis, scarlet fever, corrosive sublimate poisoning and similar toxic states. In many instances the life of the patient probably could be saved if his inflamed kidneys were given a few hours rest each day by artificial means.

RAILROAD WHISTLES MAKE CROSSINGS MORE DANGEROUS

Crossings are rendered deadly and millions of dollars worth of steam are wasted annually by whistles now used on leading railroads in this country, Prof. Arthur L. Foley of Indiana University has reported to the Indiana Academy of Science. Changing the location of the whistles on the engine and raising their pitch were advocated to save lives and money.

Whistles are placed behind the smoke stack and dome for convenience only, with no thought of the possible connection between the whistle's location and its efficiency in doing the only thing it is expected to do - to make as much noise as possible along the track ahead of the locomotive, and as little as possible in the directions where it is not only not needed but is usually a nuisance, Professor Foley said, in pointing out that the whistle should be placed in front of the smokestack and have a reflector behind it.

Every time the ordinary locomotive whistle is blown it uses the steam produced by two pounds of coal and he estimates that the ordinary locomotive wastes 36 pounds of coal and 140 pounds of water per hour in whistling. As there are 65,000 locomotives on Class A railroads alone, the cost of blowing whistles runs into millions.

Most of these whistles, Prof. Foley claimed, are from one to two octaves too low in pitch to be heard to the best advantage by the average ear. Raising the

pitch would mean smaller whistles and less steam consumption.

"It is a matter of common observation," he continued, "that locomotive whistle on different roads, and frequently on the same road, differ greatly in pitch and in quality. When one hears a whistle, frequently he can not tell whether it is a locomotive whistle or a factory whistle. He becomes so accustomed to hearing such sounds that they may call forth no mental reaction whatever. If all locomotive and traction car whistles were of one pitch and others were prohibited from using whistles of that or near that pitch, the human ear would soon come to recognize that tone and instinctively associate it with danger. Not only this, but the volume of sound required to produce a mental stimulus would be greatly lessened."

NOISES CHANGED INTO MUSIC WHEN BORKEN UP BY TREES

Stories of fairy music in the forest, of haunted waterfalls, and mermaids singing near the seashore, long thought mere figments of the imagination, may have a sound basis in fact. In "Science", Dr. Alexander Forbes of the Harvard Medical School reports numerous cases in which trees seem to have separated discordant shouts and noises and given back echoes in musical tones.

"In every case," he says, "the source of the sound - waves on a beach, roar of a river, exhaust of motor boat or discordant human voices - was one in which many pitches were present. Something in the surroundings, usually trees, must have separated the sounds according to pitch, placing those of one pitch in one place and those of another pitch elsewhere. In this respect the phenomenon appears analogous to that of white light being broken up into pure spectral colors by a prism."

This reflection or absorption of sound waves of different pitches, Dr. Forbes explains, is only rarely observed. Sometimes the phenomenon is distinct and clear in one spot, yet a few paces backward or forward only the ordinary noises are heard.

The frequent association of trees with these musical echoes is thought to be due to lack of uniformity they present as a reflecting surface for the sounds. Each tree apparently sends back part of the sound, and this reflection is broken up into innumerable parts on account of the varying element of distance.

READING REFERENCE - Miller Dayton C. The Science of Musical Sounds. New York, Macmillan Company, 1922.

French engineers are adopting an American invention, and building engines to operate with mercury vapor instead of with steam.

An apparently practical plan has been developed to use the tidal power of the Severn river of England and Wales at a cost of 30,000,000 pounds sterling.
