had the idea that if the blood could be dialyzed through a fine-pored membrane which would sieve out the waste products, it could then be returned to the body and the patient might survive. They tried this on animals, but had difficulty in keeping the blood from clotting while it was out of the body.

Discovery and development of heparin as an effective anti-blood clotting agent and of cellophane membranes, made possible the construction of practical artificial kidneys for human use.

Blood from the patient's arm is run through cellophane tubing wound around a big drum. The drum revolves in a bath of special salt solution. After its bath, the blood is returned to the patient's body through another vein.

At the same time that the impurities are being removed from the blood, beneficial chemicals can be put into it from the fluid in the bath, the chemicals being selected in accordance with the particular patient's needs. Heparin keeps the blood from clotting and the temperature can be kept the same as that of the body.

Dr. W. J. Kolff pioneered the development of this type of artificial kidney during the war at the Municipal Hospital at Kampen, Holland. After the war he came to this country and is now a staff member of the Cleveland Clinic, Cleveland, Ohio.

The artificial kidney shown in the picture is a Kolff type, but other styles have been devised. One of these uses flat cellophane sheets between longitudinally corrugated plates.

Patients with acute uremia in kidney disease, in the pregnancy complication, eclampsia, in shock conditions and in some types of poisoning, may be saved by the artificial kidney which keeps them alive while their own kidneys are recovering from the acute condition.

But other, less acutely ill patients may also be helped by this machine. And the apparatus may prove important for research leading to new knowledge of body processes.

Science News Letter, July 22, 1950

ASTRONOMY

Unseen Distant Galaxy May Prove Relativity Theory

➤ A SLIGHTLY fuzzy object surrounded by an almost-perfect halo has been discovered in the constellation Serpens by Arthur Hoag, of Harvard College Observatory.

He proposed to the American Astronomical Society in Bloomington, Ind., that in lieu of other explanation it may be a "gravitational lens," caused by the curvature of space around the large total mass of a galaxy of stars.

According to Einstein's theory of relativity, light will be deviated in the vicinity of massive bodies, and at eclipses of the sun it has been found that such deviation is observable in the light of stars passing near the sun. If a very distant galaxy of millions of stars happens to lie exactly along the line of our sight to an even more distant similar galaxy, the gravitational action of the first galaxy could conceivably cause the light of the second to be curved around it on all sides. Thus, although we could not see the one galaxy behind the other, its light would reach us as a "halo" around the nearer object.

The new object, found on a Schmidt camera photograph of 75 minutes exposure at Harvard Observatory, is of the 17th magnitude, and it has an almost perfect halo around it, 17 seconds of arc in radius. At first, this might appear to be one of the so-called planetary nebulae, which are rings of gas surrounding hot blue stars. The color of the nucleus of the new object is red, however, and the spectrum of the halo is continuous, not consisting of bright emission lines as it would if it were a planetary nebula.

The object is far from the plane of the Milky Way, where no planetaries have been observed, but where galaxies abound. Its nucleus is fuzzy, not starlike, and its appearance without the halo would cause it to be classified as a galaxy of the spheroidal type, with a total mass equal to that of 800 thousand million suns.

Science News Letter, July 22, 1950

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ENTOMOLOGY

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Photographs: Cover, Department of Defense; p. 53, Hamilton-Wright; p. 55, New York Zoological Society.

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