evidence was tinctorial in character. Whatever interpretation be put upon his findings, it is certain that a picture identical with that obtained by Gutstein's staining method can be obtained without the use of any pink dye at all. If staphylococci be lightly stained with methyl-violet alone, the excess of dye taken off with alcohol applied for a couple of seconds and the smear examined with bright illumination, the organisms appear to have a pink center and a purple periphery exactly as described by Gutstein. (Fig. 3.) The same picture can be obtained by examining anthrax bacilli in a hanging drop to which a small amount of methyl-violet has been added. The axes of the organisms appear pink—their peripheries purple. This can hardly be interpreted as a tinctorial demonstration of ectoplasm and endoplasm; it is due entirely to the effect of bright light on the purple color.

In the experiments here recorded, the evidence offered for the existence of a Gram-positive bacterial cortex consists in the demonstration that this cortex can be removed by chemical and physical means and that its removal can be proven by a loss of weight in the bacterial bodies and by a gain in weight in the fluid in which they are suspended. It is also definitely shown that, although the cortex has been Gram-positive, the medulla which remains after its removal is Gram-negative.

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Characteristic Progressive Changes in the Hypertension Roentgenogram and Electrocardiogram.

ARTHUR M. MASTER.

One hundred fifty-two private cases of hypertension were followed for periods of between 3 and 9 years. Of these, 90% were patients with essential hypertension. Teleoroentgenograms, electrocardiograms and blood pressure readings were taken at intervals of 6 months or longer. Definite progressive changes took place leading to a characteristic shape, size and position of the heart and aorta on the roentgen-ray picture and also leading to definite changes in the size and shape and sign of the Q R S-T waves in the electrocardiogram. These final changes are specific for long standing cases of hypertension.

The characteristic x-ray film in hypertension shows a sthenic or hypersthenic chest; a hypertrophied left ventricle, usually a concen-

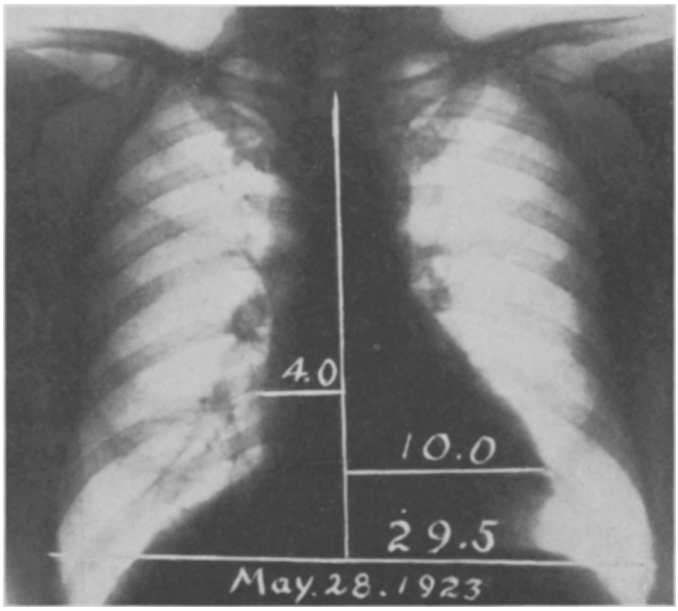


FIG. 1.

a. Bl. pr., 158/100 May 28, 1923. A practically normal heart. Slight hypertrophy left ventricle.

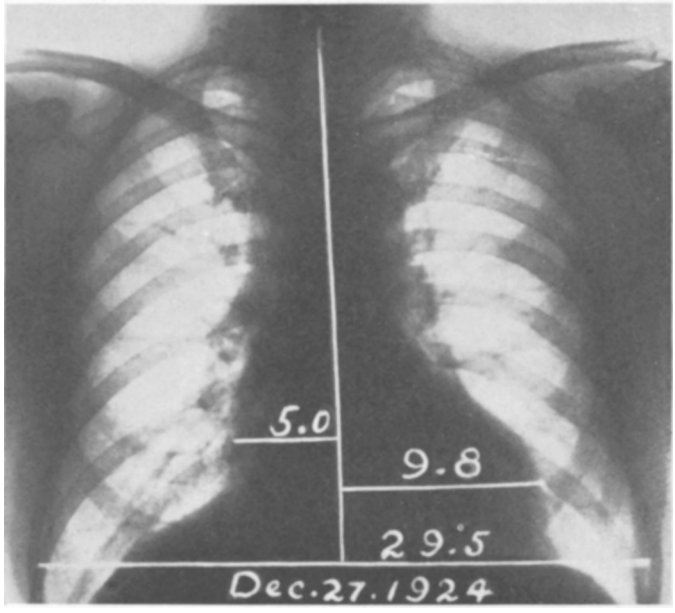


FIG. 1.

b. Bl. pr. 166/100 Dec. 27, 1924. Heart enlarging, hypertrophy of left ventricle. Tortuous aorta, prominent aortic knob.

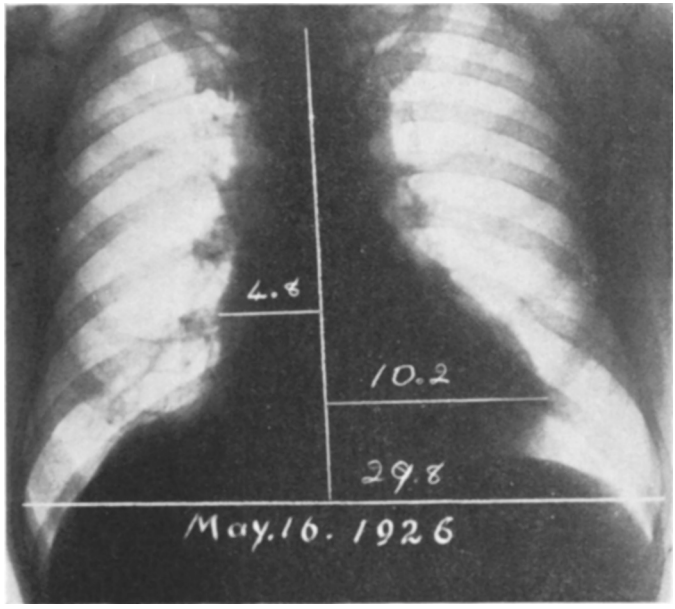


FIG. 1.

c. Bl. pr. 160/100 May 16, 1926. An increased left ventricular hypertrophy.

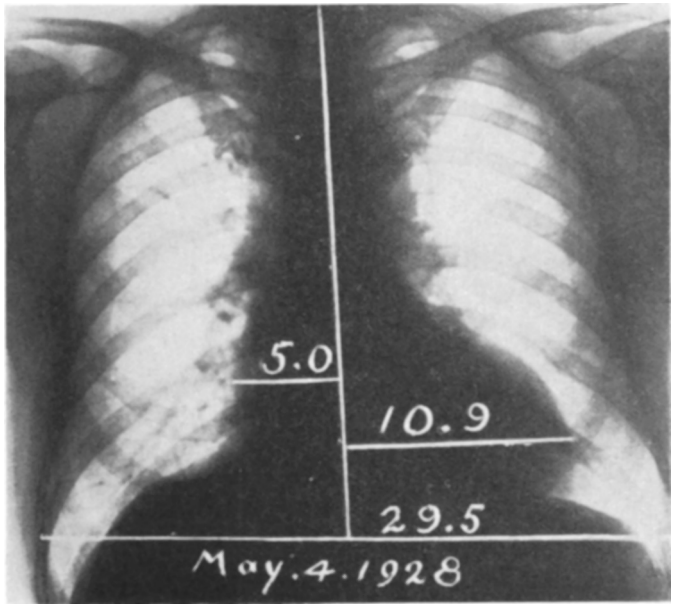
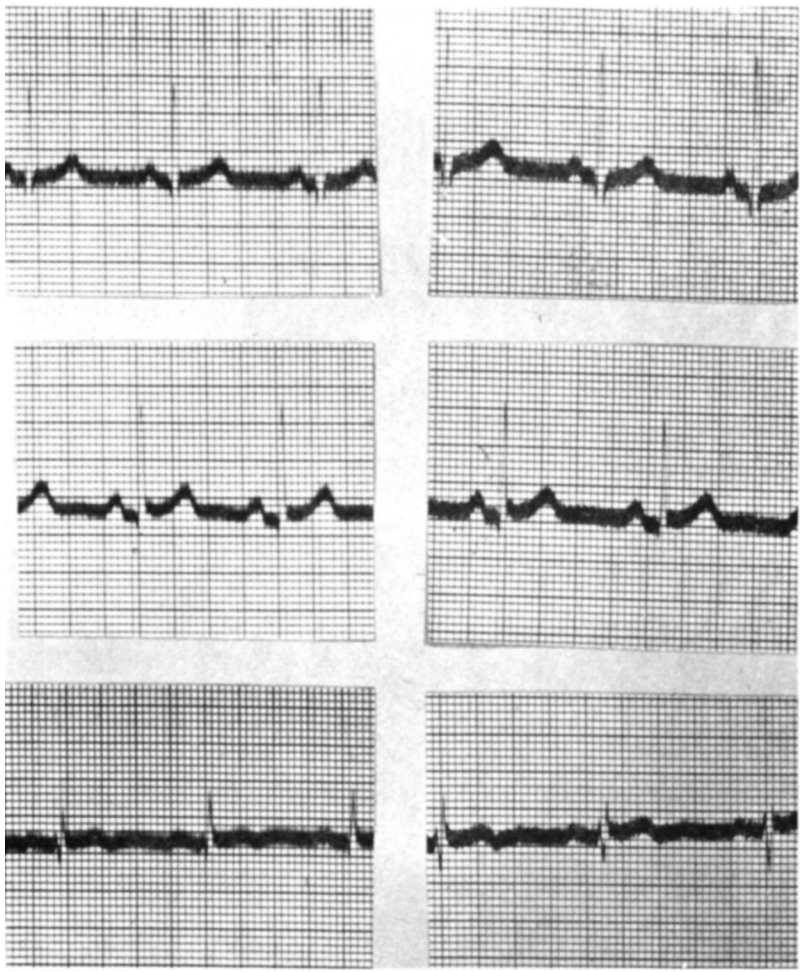


FIG. 1.

d. Bl. pr. 170/110 May 4, 1928. A marked left ventricular hypertrophy with rounded apex.

trically hypertrophied left ventricle; an enlarged heart; a dilated and tortuous aorta. The development of this heart and aorta is gradual. At first the heart and aorta are of practically normal size, shape and position. (See Fig. 1a.) A left ventricular hypertrophy then develops and the heart enlarges. (See Fig. 1b.) This development proceeds until an enlarged heart, hypertrophied left ventricle with rounded apex, and dilated, tortuous aorta appear. These changes occurred over a period of 6 years in this particular case. (See Figs. 1a, b, c, d.)

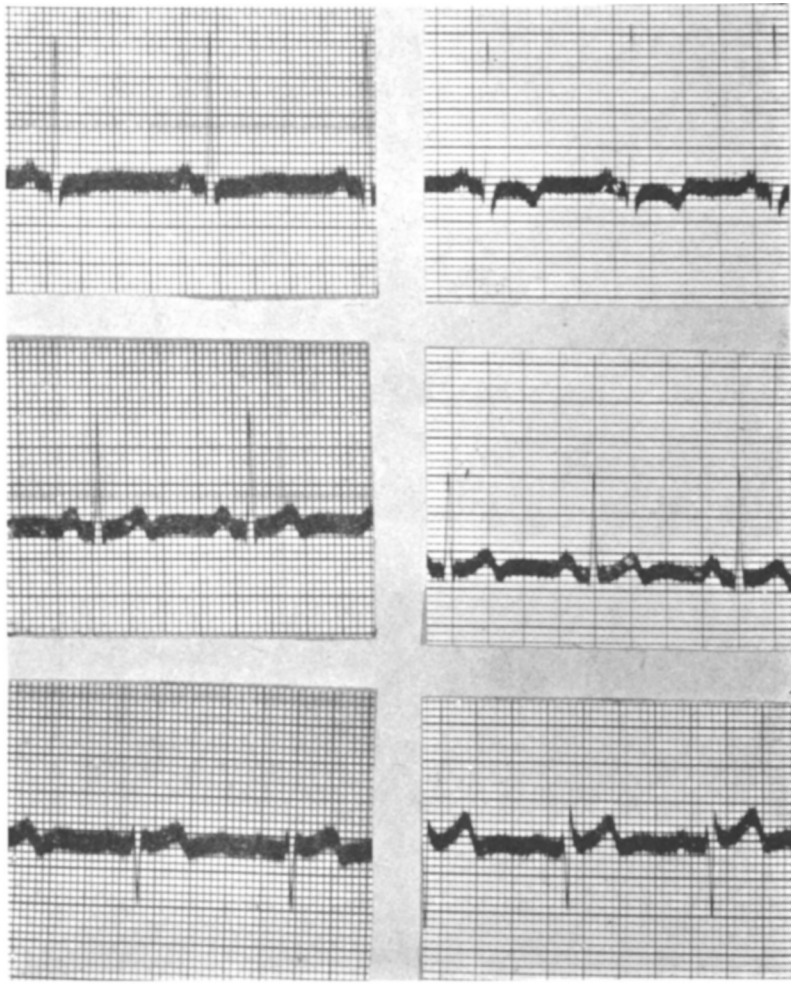


a b

FIG. 2.

a. Dec. 23, 1921. Age of patient 59. Normal electrocardiogram.
b. Dec. 29, 1923. Bl. pr. 152/90. A definite left axis deviation and increase in voltage of Q R S group.

Over a period of years a characteristic hypertension electrocardiogram commonly results. This specific electrocardiogram shows a left axis deviation of the Q R S group (left ventricular preponderance), an inversion of the T wave in lead I, high voltage of the R and S waves in which the amplitude is 20 mm. or more in at least one lead, and a diminished or absent S-T transition period. Figure 2a is a normal electrocardiogram taken from the records of



c d

FIG. 2.

c. Nov. 10, 1927. Bl. pr. 170/100. T wave in lead I isoelectric (flat) and further increase in voltage Q R S group.

d. Nov. 1, 1928. Bl. pr. 174/104. T wave in lead I definitely inverted, with still further increase in voltage of Q R S group.

a woman of 59 years of age, Dec. 23, 1921. Figure 2b, Dec. 29, 1923, shows the development of a left axis deviation and an increase in amplitude of the R and S waves. Figure 2c, Nov. 10, 1927, illustrates a further increase in voltage of the Q R S group and a flattening of the T wave in lead I; figure 2d, Nov. 1, 1928, illustrates a further increase in voltage of the R and S waves with the T wave in lead I definitely inverted. These records cover a period of 7 years.

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The Transplantation of Mammalian Tissues into Amphibian Tadpoles.

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Experiments were undertaken to test the effects of heteroplastic grafts in animals as widely separated as mammals and amphibia. Testicular and thyroid tissues from albino rats were placed in the larvae of *Rana catesbiana*, and other experiments are in progress with both embryonic and adult tissues.

In the first series of grafts no effort was made to control temperature, the experimental animals being left at room temperature of approximately 20°, subject to diurnal fluctuations. The tissues to be grafted were removed aseptically, and simply placed within the coelomic cavity of the tadpole, the coils of the intestine keeping the transplant in place against the peritoneum of the body wall. The operative animals were kept in tap water.

Histological preparations of the tissues show that after 2 days the testicular grafts become adherent to the body wall, and embryonic connective tissue cells from the tadpole begin to invade the transplant. Growth is more rapid near a broken surface, *i. e.*, at the point where the graft lies near the incision in the body wall. At 4 days, encapsulation by the host is well under way, with an interlacing of connective tissue fibers between the tunica of the testis and the peritoneum of the host. The germinal epithelium shows some degeneration but mitotic cells are still evident. At this time capillaries from the tadpole enter the transplanted tissue, the vessels following the trabeculae of the invading connective tissue. The blood supply in most cases comes from the body wall, though it may come from the serous coat of the intestine.