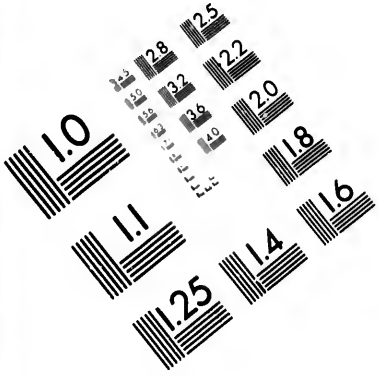

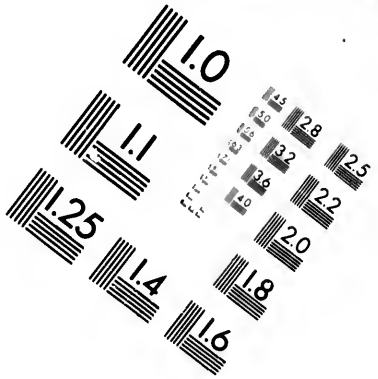

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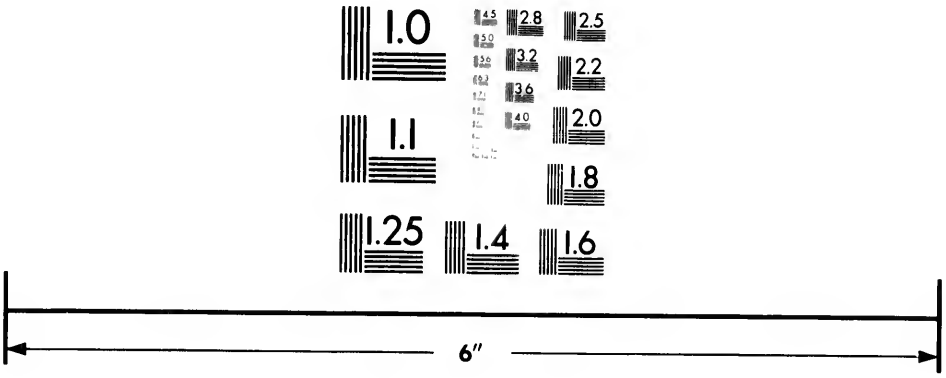

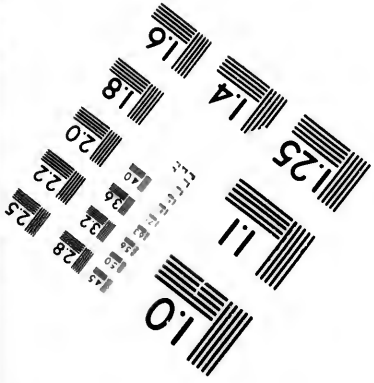

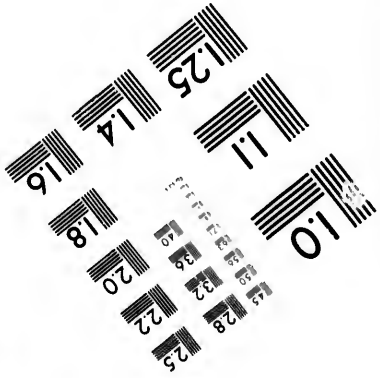

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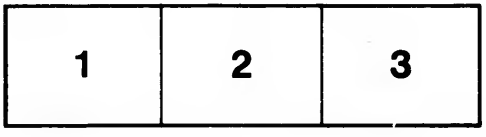

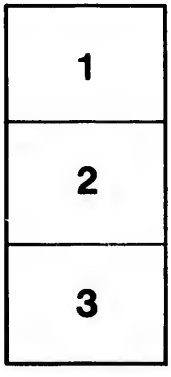

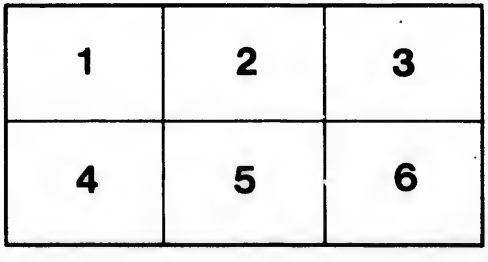

ORGANIC HEART DISEASE.

BY

SIR JAMES GRANT, M.D., F.R.C.P., (Lond.),
Consulting Physician, General Hospital, Ottawa.

(*Reprinted from Montreal Medical Journal, December*, 1897.)

1897
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ORGANIC HEART DISEASE.

BY

SIR JAMES GRANT, M.D., F.R.C.P., (Lond.),

Consulting Physician, General Hospital, Ottawa.

I thank you for the opportunity of making a few observations on the heart and organic cardiac disease this evening. Foster says the heart is a *valvular pump*, which works on mechanical principles, the motive power of which is supplied by the contraction of its muscular fibres. The frequency, force and character of the beat, with a given quantity of blood ejected at each beat, are the problems involved in mechanical action. The vital problems are chiefly associated with the correlation of the forces controlling the frequency, force and character of the beat. Cardiac impulse is found to be synchronous with the systole of the ventricle, and is felt in the normal state on the fifth costal interspace, about an inch below and a little to the median side of the left nipple. To trace out the entire list of organic cardiac diseases I feel confident is not the task assigned to me this evening, but rather to confine my observations to a few lines of thought, as far as the generalities of cardiac diseases are concerned. This centre of circulating vital force, charmed into action during the stage of utero-gestation and continuing into the seventies, eighties and nineties, uninterrupted, is a subject attractive beyond expression, and wrapped in the self-same mysterious agency, which guides and directs the processes of vitality as a whole. The chief line of thought for this evening's remarks will be as to the bearings of chronic heart disease on the parturient system. The effect of two hearts operating at one and the same time, in the same system, is a subject calculated to attract attention, and chiefly on account of the exceedingly important issues at stake. The physician in every day practice and the physician accoucheur, rarely in our larger centres, have an opportunity of following up consecutively, the entire manifestations of such abnormal cardiac conditions. Such, however, is not the case in smaller centres, where the entire rationale of such manifestations can be followed out consecutively. First, then, what are the normal changes occurring in the heart during pregnancy? The first great question in cardiac disease during the parturient period, was raised by the French school. Whether the left ventricle of the heart does or does not normally

[1] Read before the Medical Society of Ottawa, Nov. 10th, 1897.

hypertrophy during pregnancy. Larcher in 1825 and 1826, while serving as *interne* in the Paris Maternity Hospital, first directed attention to the fact that the left ventricle of the heart normally becomes hypertrophied during pregnancy. He examined during three years fully 130 hearts of patients who died at the hospital, the majority of them of child-bed fever. The ages of the patients varied from 18 to 35 years. From his observations he concluded that the heart in the human species is normally enlarged during the period of gestation; that the enlargement affects almost exclusively the left ventricle; the left auricle; the right side of the heart being little if at all changed, and lastly that it varies in amount, from a minimum of one-quarter of the normal thickness of the ventricle to a maximum of one-third of it; that it constantly occurs and that it disappears but slowly during the period of lactation. Larcher also inclined to the belief, that repeated pregnancies, within short periods, particularly if at the same time they suckled their children, might give rise, even in a perfectly sound heart, in all its openings, to permanent hypertrophy. It is now a well recognized fact, that the pregnant condition modifies and affects the conditions of the collective blood vascular system in a most important manner, influencing thus very materially diseases of the lungs, kidneys, etc., existing at one and the same time. Larcher's views were first published in 1828, and a full record was addressed to the Academy of Science, Paris, April 6th, 1857. This subject attracted very considerable attention and investigation, at the hands of Drs. Bean, Ducrest and Bizot, who fully endorsed the views of Dr. Larcher and give the mean thickness of the left ventricle as averaging from 1.0 per cent. to 1.5 per cent. and 1½ per cent. Dr. Blot did not confine his observations to measurements of thickness alone of the walls, but by an examination of 12 hearts of women who died during pregnancy, in the lying-in-period, he found the average weight to be 9 ounces 38 grains troy weight, whereas the average weight of the healthy heart of young women is about 7 ounces 120 grains troy weight. It would thus appear, according to Mr. Blot, that the heart of the pregnant female gains in weight fully during pregnancy, and that the hypertrophy is confined almost entirely to the left ventricle. Dr. Fritsch the great German authority (*Archives of Gynæcology*) is inclined to doubt the statements of the French authorities and to explain a considerable amount of the increased dullness, by upward and forward displacement of the heart, from the pushing of the diaphragm, and also inclines to the belief, that the statements of the French authorities as to increased muscular tissue, in the left ventricle during pregnancy, are considerably overdrawn. Fritsch although

adhering partially to the view that there is normally some enlargement during pregnancy, is somewhat skeptical as to eccentric hypertrophy of the muscular tissue of the left heart, and inclines to the belief that a passive dilatation of the organ, of a slight amount, is sufficient to account for the necessities of the case. This same authority makes a statement somewhat contradictory, that in general the hearts of lying-in-women, on post-mortem examination, appear larger, yet one would require to take accurate weights and measurements of them. In my humble opinion, conclusions accurate in character, cannot be arrived at, without both weight and measurement, such as the French authorities have most carefully performed. Herman Lobléin meets Blot's deductions from the increased weights of hearts of pregnant women, by the results of an examination of the hearts of 9 women who had died in the Gynæcological Clinique at Berlin, during the previous year. Death in these cases was due to rupture of the uterus, or some other acute cause, terminating life within a few days after delivery. The average weight of these hearts, he found to be 247 grms; while according to Blot, the weight of the heart of the pregnant female, is to that of the non-pregnant female, as 290.95 to 220 23 grms. He argued that the average weight of the hearts of pregnant females would be found not greater than the average weight of hearts of non-pregnant females. He argues that authors in maintaining the existence of hypertrophy of the left heart, have clinically bestowed too exclusive attention to the cardiac dullness, which from the upward displacement of the heart in the course of the pregnancy is specially liable to mislead, and have not noticed whether the cardiac impulse was found to be intensified, the first sound at the apex specially loud, the second aortic sound accentuated, the radial pulse hard and difficult to compress, or whether the open beat was thrown outwards and downwards, from its normal situation. Doubtless (says Lobléin) the absence of all clinical symptoms, by which we recognize the hypertrophy of the cardiac muscle, is the rule at the end of the normal pregnancy; its occurrence on the other hand he considers the exception. Still notwithstanding the strong negative statements of Lobléin, Professor Angus Macdonald of Edinburgh says he cannot help feeling convinced that in the latter months of pregnancy in the case of women with normally sized hearts, there is a certain amount of such hypertrophy. Peacock in his tables of the weight of the healthy hearts of females dying between the ages of 20 and 55 years, favours the doctrine of there being a certain degree of hypertrophy in the hearts of parturient females. Considering the entire circumstances, a certain amount of cardiac hypertrophy, is very likely, by

the existence of greater work for the heart to perform during pregnancy, and more particularly as there is an undoubted arterial tension in the latter months of pregnancy, as has been ably demonstrated by the sphygmograph in the hands of Mahomed, Meyburg, Marey, and Blot (*Archives of Gynæcology*). What stronger evidence could we desire as proof of exalted venous tension, than the various varicosities during pregnancy, which point to abnormally high tension during the parturient period. The abnormal demand for blood at that time, and the circulation in the heart in a given period, gives rise to a demand for increased cardiac force, as the result of which, an hypertrophic cardiac condition, such as ably defined, might very naturally follow. After careful analysis of the literature on this subject I am disposed to accept the opinion, that we have reason to believe, that in the left ventricle during pregnancy, there is a certain degree of increase in its capacity, associated with a variable amount of muscular hypertrophy in its walls. The parturient state is one marked by well defined systemic changes, and in the development and progress of such it is well to note the part played by cardiac action, when any abnormality is known to exist. The successful issue in a case of pregnancy depends much on watchfulness through the entire period of uterogestation, and it becomes even much more so if any line of diseased action is known to exist. The correlation of the forces as to the mutual bearings of cardiac disease and pregnancy are all important. Hecker (*Leipsig Clinic* 1860) states, that the danger to women who suffer from valvular lesions, determined by pregnancy and parturition, is capable of developing itself in two directions. First, during the latter months of pregnancy, the thoracic space is narrowed, and *the lungs*, embarrassed by cardiac lesion, frequently become functionally unable through serous effusion, and life's activity closed ; or the heart becomes so used up by the exertions of labour, that its disturbed mechanism comes to an end. Hecker, Dohrn and Fabius (of Leipsig) incline to the belief, that while the perpendicular axis of the thoracic cavity is diminished during the latter months of pregnancy, and likewise its antero-posterior axis, at the lower part of the cavity, the tranverse diameter is at the same time much increased, so that as a whole, the cavity is not at all or very triflingly diminished, except some pathological condition is present, such as abdominal or chest dropsy. The important fact is that the general belief of the profession inclines to the idea that the diminution in vital capacity of the lung's condition by normal pregnancy is very immaterial indeed.

Of the many authors who have written on this subject by far the most original and important observations have been made by Prof.

Spiegelberg in 1871-72 (*Medical Union*—Lecture by Peter, Hospital de la Charité, Nov. 1871). "I wish to speak to-day of facts of which "the authors of treatises on diseases of the heart, have left in the "shade, and which authors of treatises of obstetrics seem to me to "have entirely forgotten; those facts are the pulmonary accidents to "which pregnancy exposes women affected with diseases of the heart." He recommends the greatest care as to movements and exposure, supposing a patient with heart disease becomes pregnant, the avoidance of pregnancy in future, and avoidance of lactation in all cases as well to escape any abnormal strain on the heart. Fritsch denies the correctness of Spiegelberg's views relative to diminished aortic tension. He is of opinion that the sudden accidents that arise from heart disease during child-bed, are due to defective cardiac compensation, being unable to meet the conditions introduced by the suddenly altered relative pressure, although he disagrees with Spiegelberg as to the manner in which it acts. The healthy heart can meet these extra requirements but the diseased organ suffers from imperfect power of accommodation to the demands upon it. Valvular lesions are very apt to be altered for the worse during pregnancy, of which we have evidence in the readiness with which pregnant women with unsound hearts, suffer from puerperal endocarditis. An important conclusion arrived at by Spiegelberg is, that the placental circulation is capable of giving little obstruction to the general circulation, but may operate injuriously with other evil influences, such as compression of the chest, bronchitis, pneumonia or pleurisy, in aggravating the evil effects of even a slightly dilated right ventricle. Of fifteen cases of labour, complicated with heart disease which he treated, only one of the patients died during delivery from pulmonary œdema. He comes to the conclusion that in most cases of heart disease death does not take place during delivery. From all the facts I have been able to bring before you this evening it is evident that pregnancy is likely to introduce serious complications in the condition of a patient suffering from chronic heart disease, except the lesion is not of very recent origin, which is a very extenuating circumstance.

Professor J. H. Musser of the University of Pennsylvania, in his recent address before the British Medical Association, Montreal, called attention to one of the most interesting and attractive points in cardiac disease, namely the disappearance of endocardial murmurs of organic origin. It is the permanency usually of organic heart disease which serves to distinguish between the murmurs of anæmia, or of incompetency from dilatation. It has however become a well recognized fact, that organic murmurs often appear and disappear from various circumstances, such as change of position and rest.

Even temporary disappearance of the murmur is believed to be due to the extreme dilatation, and consequent debility of the heart muscle. Aortic murmurs rarely disappear under such circumstances.

It is to this class of cases of heart disease, without murmur, that Fagge applied the term "Sandy desert of cardiac pathology." That the murmur of mitral obstruction may be temporary or permanent, the chief authorities on cardiac disease favour this view, and Osler adverts to the disappearance of murmur with rupture of compensation. Dr. Gee favours the idea that even in aortic regurgitation in which organic murmur is the most peristent, the sound producing power may disappear when the heart falls into a state of systole. There are also various pathological conditions which govern valvular hæmatic action, all of which render the subject most attractive. The sound produced by even mitral regurgitation, has been known to be wanting, disappearing suddenly in the most unexpected manner. Such murmurs disappearing are usually inorganic. Walsh has pointed out the disappearance of this murmur in chorea. The irregularities in mitral regurgitation so far noted, are connected with some organic heart condition, and modified or otherwise by the peculiar circumstances of the case.

The disappearance of endocardial murmurs cannot be observed too cautiously, in forming an opinion as to the existence or non-existence of organic disease. Sansom (British Medical Journal, Oct. 16, 1897) states that the signs of structural disease of the heart have borne no proportion to the degree of cardiac tumult, and that in every such case there should be a careful investigation of the nervous system, more especially in its relation with the cardiac reflex. The most frequent form thought to be almost entirely nervous is tachycardia, which I have found usually paroxysmal in character. I wish to refer briefly to the mountain cure of heart disease. In March, 1887, at Leeds, Dr. Clifford Allbutt called attention to the growing practice of recommending exercise rather than perfect rest, in some cases of heart disease, and described the German plan of graduated exercise by ascending hills, known as the mountain cure. Dr. Allbutt remarked that cases for this treatment must be very carefully selected, as such treatment should be avoided in cases of aortic regurgitation or atrophic conditions of the heart.

In conclusion let me say, there is an impression with the public, that disease of the heart usually means sudden death, to the person so afflicted. Such however, has not been my experience, and the following case, I now cite as an illustration of that fact.

J. S., aged 36 years, of robust habit of body, active, energetic and

able to endure almost any degree of physical exertion, being known as an expert skuller, of healthy parentage, and no tendency in family to hereditary disease. Thirty-four years ago the late Dr. Campbell of Montreal, diagnosed cardiac disease in this case. From 1880 to 1892, he had periodic attacks of acute rheumatism and erysipelas, chiefly of the scalp and legs. When first examined, I found well defined mitral stenosis with cardiac murmurs audible in almost any part of the chest, but most acutely in the pericardial region. To have lived such a length of time, and performed his usual official duties, as an architect, was to me a subject of much interest, and the conclusion arrived at, is, that in cardiac disease caution should be exercised in giving a positive opinion, as to the inability of the individual under such circumstances. In the present case, it is evident the abnormal changes, giving rise to the murmurs were very slow and progressive in character, having taken fully 30 years to compromise seriously the integrity or function of the mitral valves.

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