and this increase was more persistent than in the first test. The heart beat was irregular with numerous extra-systoles. Corresponding to the marked change in the physical signs, there was also a marked disturbance in the subjective sensations of the patient following the administration of the thyroid substance. She developed marked trembling of the back, alternating with choreiform movements of the shoulders. These movements occasionally attained the severity of mild convulsions, which could be suppressed by the patient only by the utmost exercise of the will. These disturbances disappeared with the return of the blood pressure to normal, while the heart rate returned to normal later.

This clinical experiment suggests that large doses of thyroid substance caused sensitization toward the effects of epinephrin in such a way that, while the systolic blood pressure showed a greater and more persistent rise after the administration of thyroid than before, due to a constriction of the peripheral arteries and arterioles, the diastolic blood pressure fell to zero with the development of a capillary pulse, due, probably, to a dilation of the capillary system.

One may conclude, therefore, that following the administration of these large doses of thyroid substance, the dilator action of epinephrin on the capillary system was apparently antagonistic to its constrictor action on the peripheral arteries and arterioles.

76 (2308)

Intracardiac irradiation of the valves from radium emanation, employing a two-stage operative technique.

By P. CORYLLOS, D. J. EDWARDS, and H. J. BAGG.

[*From the Physiological Laboratory, and the Memorial Hospital, Cornell University Medical College, New York City.*]

In mitral stenosis there is indicated, on theoretical grounds, some form of intervention designed to dilate the narrowed orifice and thereby relieve the functional embarrassment of the heart. In advanced cases such relief must come through an

intracardial approach. The operative dangers of such a course are necessarily great, but in hopeless cases of stenosis the chances of final success through opening-up of the constricted orifice, with the resulting advantages, may well outweigh the dangers. A single attempt in this direction has already been reported by Dr. Cutler, of Boston.

An important characteristic of mitral stenosis from the standpoint of its ultimate relief is the slow progressive nature of the lesion as it normally occurs. This makes it impossible to predict whether surgical dilation will effect a permanent relief or will only alleviate the condition temporarily, after which there will occur a reformation of the old stenotic ring. The latter possibility makes it irrational, in the present state of our knowledge, to expose a patient to the dangers of this surgical operation.

In view of these considerations we have been attempting in the past year to produce in dogs a real stenosis characterized by scar formation on valves and ring and presenting a progressive nature, as contrasted with the many previous attempts in this direction which have, for the most part, been in the nature of mechanical ligations of the orifice. With some reliable method of provoking a valvular lesion of this kind, it is our aim, then, to observe more fully the course of events following surgical intervention.

The work to date has shown that valvular disease induced by cauterization of the valves with sodium or potassium hydrate or by mechanical injury of these structures is impracticable. On the other hand, the use of strong doses of radium emanation (200 to 400 mc.) applied directly to the A-V valves and introduced in a special applicator through the appendix, has given promising results. In some hearts thus treated macroscopical evidences were shown of marked congestion and edema of the entire valve, together with congestion at the valve base and patchy thickening at the borders of the other leaflets.

Another aspect of the work presenting features of interest is the operative procedure. In the early experiments the mortality was high, due to shock, double pneumothorax, empyema, and pneumonia. In order to overcome many of these difficulties we worked out a very successful two-stage operation. In the first stage two or three ribs are resected in the precordial region. The parietal pleura thus exposed, but unopened, is treated with car-

bolic acid. This provokes some adhesions which serve in a measure to prevent lung collapse when the second stage of the operation is carried out two or three weeks later for the purpose of irradiating the valves.

77 (2309)

Viability of the intestine.

By H. B. EISBERG.

[*From the Department of Experimental Surgery, University and Bellevue Hospital Medical College, New York City.*]

The margin of safety has not been definitely determined concerning circulatory changes in a segment of intestine as the result of injury, thrombosis, embolism or mechanical intestinal obstruction. The work of Rydigier[1] closely followed by that of Madelung[2] showed that it was impossible to establish any definite rule as to which vessels of the mesentery of the small intestine could be ligated without danger of gangrene. The experiments of Mall and Welch[3] brought out the fact that necrosis occurred if much more than 5 cm. of intestine were separated from its blood vessels.

This report is based upon the observations in twenty-four dogs. The circulation to an intestinal segment in each experiment was interfered with by ligation of various vessels in different portions of the intestine. The results obtained were as follows:

---

1 Rydigier, L., *Berl. klin. Woch.*, 1881, xviii, 593; *und Deut. Z. Chir.*, 1884, xxi, 546.

2 Madelung, O., *Arch. klin. Chir.*, 1882, xxvii, 227.

3 Mall and Welch, *Albutt's System of Medicine*, 1902, vi, 239.