a diuresis and survived. One, No. 2, of the lost cases was definitely syphilitic with aortic regurgitation and hypertension and the other, No. 4, was probably also syphilitic with, however, only an aortitis. Both of the therapeutic failures, No. 2 and No. 4, had serum Ca (2) 11.3 mgm. and (4) 11.4 mgm. (—1.8% and +2.6% low respectively according to Peters' formula), while the total proteins were low, namely (2) 5.64% and 5.58%. The albumin fraction of each being greatly reduced (2) 3.02% and (4) 3.67%, while the globulins were slightly increased (2) 2.63% and (4) 1.9%.

In 2 cases of auricular fibrillation that diuresed even in the presence of considerable nephritis and improved, the Ca levels were 7.50 mgm. and 7.68 mgm., which were extremely low, (—40.2% and —39.5% lower than calculated normal according to Peters' formula). The inorganic Ps were exceedingly high, 7.90 and 4.18 mgm., probably due to the nephritis. These patients showed fairly normal total proteins, 6.22% and 9.48%, the serum albumins were decreased 4.22% and 3.36%, while the globulins were increased slightly, 2.00% in case 1, and greatly increased to 6.13% in case 3. With diuresis the Ca values rose to —19.4% below the normal of Peters' formula. These data warrant further and extensive study for corroboration.

5263

Interference Dissociation in Contrast to Reciprocating Rhythm.

GEORGE HERRMANN AND RICHARD ASHMAN.

From the Heart Station of the Charity Hospital and the Department of Medicine of Tulane University School of Medicine.

There is apparently no certain way of distinguishing between interference dissociation and reciprocating beats in the individual case, barring some accidental irregularity which affords a certain clue. There are, however, 2 criteria which serve to differentiate the conditions, (1) auricular regularity or irregularity and (2) P wave direction. If P waves are clearly upright in leads I and II or I, II, and III, it becomes certain that one is dealing with interference and not with reciprocation. If the auricles are regular, as is true in one of our cases, then the mechanism is in all probability interference. It would be a rare coincidence which would make the progressive prolongation of retrograde conduction time such as to make the

auricle regular; reciprocation therefore practically always presents an irregular contra-directional auricular activity.

Electrocardiograms are presented to call attention to the electrocardiographic differential diagnosis between "Interferenz Dissoziation" (Mobitz[1]) or Dissociation with Interference (Wenckebach and Winterberg[2]) and the entirely different mechanism of reciprocating beats for which it may be mistaken. The tracings show some conduction defect also, but this is not at all related to the unusual mechanism of interference which does not require the presence of defective conduction for its inception.

Interference dissociation will necessarily appear when there is free A-V conduction, complete V-A block, and an auricular rhythm which is slower than the ventricular. Under these conditions, those auricular impulses which follow the idioventricular beats by a great enough interval will reach the ventricle, since they encounter no absolutely refractory muscle in the conducting path. The ventricular beats they arouse will be premature. In our cases, as in the great majority of reported examples, the idioventricular pacemaker is supraventricular, *i. e.*, in the His bundle or A-V node. Consequently the transmitted auricular impulse must pass through that pacemaker and discharge it. The next idioventricular beat, therefore, follows this discharge after an interval equal to the typical idioventricular cycle length. It should be evident, at the same time, that there is no disturbance of auricular rhythm.

Thus the criteria which serve to set this mechanism apart from reciprocating beats are: (a) auricular regularity, or, in the presence of some irregularity, the auricular cycle during which the premature ventricular beats occur is not consistently longer than the others; and (b) P waves are of sinus, eudirectional, positive or upright form. As will be shown in our full report, there is, however, a *remote* possibility of both these criteria being present, especially in lead I, in case of reciprocating beats.

---

[1] Mobitz, W., *Deutsch. Arch. f. Klin. Med.*, 1923, **141**, 257.

[2] Wenckebach, K. F., u. Winterberg, H., *Die unregelmessige Herztatigkeiten*, 1929, I.