

that this result is related to the well-known antagonism between calcium and epinephrine.<sup>7, 8</sup> In these studies the maximum quan-

TABLE I.  
Summary of Clinical Experience in Relief of Chill Reactions by Intravenous Administration of Calcium Chloride.

Group	Case No.	CaCl <sub>2</sub> 10% cc.	Result
Epinephrine given during serum administration	1	10	Transient relief
	2	20	Relief with recurrence
	3	10	Transient relief
	4	20	Relief with recurrence
	5	15	No effect
No epinephrine	1	10	Complete relief
	2	15	" "
	3	10	" "
	4	10	Complete subjective relief, slight tremor persisted
	5	10	Complete relief
	6	10	" "
	7	20	" "
	8	20	" " slight tremor persisted

tity of 10% calcium chloride to be given with safety to an adult of average weight was fixed at 20 cc. Studies are now in progress as to the mode of action of calcium in the relief of chills and concerning its action in chills associated with other processes.

*Summary.* The intravenous use of calcium chloride serves to alleviate chill reactions following antipneumococcus serum therapy. The use of epinephrine during serum administration appears to inhibit this favorable action of calcium.

### 9776 P

#### Segregation of "Cleavage-Substance" in the Unfertilized Egg of *Dendraster excentricus*.

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The unfertilized eggs of the sand-dollar, *Dendraster*, which normally are shed from the ovaries fully mature, were sedimented by

<sup>7</sup> Salant, William, and Vogt, Elkin, PROC. SOC. EXP. BIOL. AND MED., 1929, **26**, 681.

<sup>8</sup> Jendrassik, L., and Czike, A., *Biochem. Z.*, 1928, **193**, 285.

centrifuging at approximately 40,000 gravities for 7-10 minutes, with the result that the eggs were elongated to dumb-bell-shape and pear-shape and the nucleus thrown to the extreme centripetal end, against the "oil-cap". The eggs were then caused to develop parthenogenetically by means of a modified Loeb's method of acidulated sea water and hypertonic treatment. With respect to the effects of sedimentation on subsequent development, the eggs of different individuals behaved somewhat differently. On the basis of types of cleavage the females whose eggs were used may be classed in three groups, namely, (1) those whose eggs show complete but unequal segmentation, cleavage of the centripetal (nucleated) end being retarded so that as a result the blastomeres are abnormally large there, rapid cleavage at the centrifugal end resulting in blastomeres of approximately normal size; (2) those in whose eggs the centripetal half (with egg-nucleus) shows nuclear division and the formation of multiple asters, without cytoplasmic division, but the non-nucleated cytoplasm of the centrifugal half cleaves regularly, forming normal-appearing blastomeres; (3) those in whose eggs the egg-nucleus at the centripetal end moves inward and enlarges but does not divide, only the centrifugal (non-nucleated) half of the egg showing cytasters and regular cytoplasmic division. Assuming that cleavage of the cytoplasm depends upon the presence of a substance carried by heavy structures in the cytoplasm, then the 3 typical results may be understood if we suppose that in (1) the heavy structures bearing cleavage-substance are only slightly segregated by the centrifugal force applied, since the centripetal end, while it does segment, is greatly retarded, that in (2) there has occurred segregation of cleavage-substance sufficient to inhibit cytoplasmic division in the centripetal half but nuclear division still occurs, and that in (3) there is complete segregation of cleavage-substance in the centrifugal half, since even nuclear division fails in the centripetal half. The appearance of cytasters and nuclear division in the centripetal half in (2) without cleavage of the oöplasm of that half would suggest the elimination of centrosomes or centrioles as bearers of the substance responsible for cleavage of the oöplasm. But such cleavage-substance has been completely segregated in the non-nucleated centrifugal half in groups (2) and (3).