TABLE I.
Estimates of Content of Normal Membrane Particles in Preparations of Influenza Virus.

Virus preparation	Estimations with antisera for normal particles: Unabsorbed %	Sheep cell—absorbed %
Multivalent formol vaccine	35	27
PR8	51	57
Chick cell absorbed PR8	29	39

formol-treated preparation of multivalent vaccine, prepared by the ultracentrifugation of the infectious chorioallantoic fluids of the fertile hen's egg, and kindly supplied by Dr. W. M. Stanley of the Rockefeller Institute; the second was a preparation of the PR-8 strain isolated by several differential centrifugation cycles and the third was a preparation of the PR-8 strain concentrated by adsorptions and elutions from chick red blood cells and finally sedimented in the ultracentrifuge.

Saline suspensions were added to the 3 sera employed previously. Absorbed antibody nitrogen was determined, referred to the curves previously estimated, and equivalent NP nitrogen values were obtained. The content of normal allantoic membrane particles was then estimated on the assumption that the normal groupings in the virus preparations were as reactive as if they were present in the normal particles described. These calculations are summarized in Table I.

If these normal particles containing the same antigen distribution were built into the particle bearing virus activity, these estimates are minimal since some normally reactive groups are probably rendered inactive. A number of other possibilities may also limit the validity of these estimates. However, the qualitative conclusion may be drawn that current preparations of the influenza viruses contain antigens typical of the host in amounts sufficiently large to render dubious the significance of chemical data obtained in the process of characterizing this material as an alien and specific viral agent.

14812 P

Motor Analysis of Anti-Peristalsis in the Descending Colon of Rabbit.

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As far as we are aware, antiperistalsis of the descending colon of rabbit has never been studied by direct inspection, yet this can be readily accomplished. The rabbit is narcotized by the subcutaneous injection of 150 mg sodium barbital per kilo; after 45 minutes the descending colon is exposed by a cut through the linea alba from the ensiform cartilage to the pubis; a segment of the descending colon is selected and prepared by making two cuts about 9 cm apart; these cuts sever 60% to 80% of the gut, opposite to the mesenteric border; the segment and adjacent portions of the colon are milked clear of scybala. Now by introducing dry, normal scybala either at the oral or aboral cut, peristaltic and antiperistaltic waves may be produced. Sluggish motor activity is readily improved by subcutaneous injection of 0.1 to 0.3 mg of physostigmine sulfate per kilo.

Results. The introduction of a dry scybalum 1 to 2 cm into the segment at the oral or aboral end generally produces a peristaltic contraction after a short period of time. If the progress of the scybalum is prevented by a gentle digital compression of the segment, the peristaltic wave of contraction sooner or later relaxes and the formerly relaxed, com-

pressed area contracts, the scybalum now moves antiperistaltically and may be expelled at the oral cut or enter the colon oral to the cut.

The antiperistaltic wave shows the following characteristics:

1. A contraction wave of the circularis 0.5 to 1 cm long, produces a grayish-white bloodless cord, while its surface longitudinal layer appears pink. The length of the progressing contraction remains more or less constant. The contraction wave passes without noticeable pause through the cut to the oral colon.

2. A wave of inhibition 1 to 2 cm long precedes the scybalum; this portion of the colon is pink-red, relaxed and shows longitudinal folds; no contraction occurs in this area if it is stroked with a blunt dissecting needle or if digitally compressed for a short time. This inhibitory wave passes the cut and relaxes the colon oral to the cut so that frequently the scybalum enters without difficulty. When alternate peristalsis and antiperistalsis occurs in the segment, then the grayish-white, bloodless, contracted circularis on one side of the scybalum, is seen becoming pink and then relaxing permitting progress of the scybalum, while the circularis on the other side progressively contracts.

Changes seen over the scybalum during its transit: on the face of the scybalum adjacent to the traveling, contracted circularis, a series of 3 to 4 transverse ridges may be seen; they are produced by contraction of the longitudinal fibers and lift the relaxed circularis bands over the scybalum. This is clearly seen when the scybalum enters the cut: in antiperistalsis the aboral lip of the oral cut is curled back 3 mm plus by the contraction of the longitudinal fibers and the relaxed, inhibited, circularis is lifted over the scybalum, and then the circularis contracts and the scybalum enters the inhibited colon oral to the cut. After its entry the circularis of this section contracts powerfully; the oral lip of the cut, however, shows but little curling, usually 1 plus mm. Inspection of the lips of a cut shows thus whether a peristaltic or antiperistaltic wave has recently passed.

The speed of the antiperistaltic wave is much slower than that of a peristaltic wave.

No clear-cut antiperistalsis was ever seen after pithing the spinal cord, combined with subdiaphragmatic section of both splanchnics and vagi.

Antiperistalsis in our experiments, therefore, obeys the same basic conditions developed by Bayliss and Starling[1] for peristalsis, if allowance is made for the change in direction.

[1] Bayliss, W. W., and Starling, E. H., *J. Physiol.*, 1899, **24**, 99; *ibid.*, 1900, **26**, 107 and 125.

14813 P

Inhibition of Choline Acetylase by α-Keto Acids.*

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Evidence has been provided for the assumption that the energy released by the breakdown of phosphocreatine is adequate to account for the electric energy released by the nerve action potential.[1] Hence if the primary event responsible for the alterations of the nerve membrane during the passage of the impulse is the release of acetylcholine, as recently suggested,[2-4] energy rich phosphate

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[1] Nachmansohn, D., Cox, R. T., Coates, C. W., and Machado, A. L., PROC. SOC. EXP. BIOL. AND MED., 1943, **52**, 97; *J. Neurophysiol.*, 1943, **6**, 383.

[2] Nachmansohn, D., Cox, R. T., Coates, C. W., and Machado, A. L., *J. Neurophysiol.*, 1942, **5**, 499.

[3] Nachmansohn, D., *Collecting Net*, 1942, **17**, 61; *Biol. Bull.*, 1944, **87**, 158.