mild illness. Both of these were tested in groups of 7 human volunteers. All 7 in each group developed signs and symptoms comparable to the upper-respiratory infections seen in the original donor and the first volunteer group. However, in this total of 14 volunteers the illness was more severe and of longer duration, persisting 7–11 days. After 7–24 hours incubation, all complained of dry, irritated throats (without objective pharyngitis) and exhibited malaise out of proportion to physical findings. Within a few hours nasal obstruction and postnasal discharge with frequent expectoration developed and remained prominent during the course. All complained of frequent supraorbital headaches, moderate sneezing, and an infrequent, mild, nonproductive cough. Hoarseness was evident in 9, one of whom became aphonic for about 12 hours. Nine complained of burning, watering eyes (with mild conjunctivitis objectively) and vague chest aches without significant X-ray findings. Intervals of profuse serous rhinitis were observed in 5. Early in the illness, 5 complained of chilly sensations and hot flashes. Objective signs of pharyngitis, lymphoid follicular prominence, hyperemic obstructed nasal passages, and profuse postnasal discharge were observed in all. Temperatures between 99° and 100° F. occurred at irregular intervals in 12 volunteers. No significant urine or white blood count changes were apparent. An equal number of controls selected at random from among the volunteers received normal allantoic fluids with and without chorioallantoic membranes at the same time and under conditions identical with those receiving infectious material. These men remained well and showed no change in diurnal temperature variations.

Sixth-passage allantoic fluid produced a moderately severe upper-respiratory infection of 8–11 days duration in 15 of 16 volunteers inoculated intranasally.

Seventh-passage allantoic fluid produced a similar clinical disease in 14 of 16 volunteers. No decrease in severity of infection has been evident.

To date, 8 groups of volunteers totaling 60 individuals have been inoculated with allantoic fluids or fluids plus membranes from embryonated hens' eggs inoculated with the agent. Of the 60 individuals, 57 have developed a characteristic syndrome that has been consistent through the 8 groups. Simultaneously, 8 groups of controls totaling 48 individuals have been inoculated with noninfected allantoic fluids or fluids plus membranes. Except for mild, transient, nasal irritative phenomena in from 25 to 50 per cent of these, they have remained well.

The exact nature of the agent, whose presence in the allantoic fluids and in macerated allantoic membranes plus fluids was demonstrated by producing signs and symptoms in the human volunteers, has not been defined. Bacteriological cultures of allantoic fluids and of fluids plus macerated membranes have been sterile in thioglycollate and Casman's blood agar media. Preparations stained by the Giemsa and Macchiavello techniques, when studied microscopically have failed to reveal bodies suggestive of bacteria or the larger viruses.

The material has so far failed to produce symptoms in several strains of mice, hamsters, rats, cotton rats, guinea pigs, and rabbits. Allantoic fluids have failed to agglutinate chicken red cells, and the volunteers have shown no rise in antibody to either influenza A or B.

The infectiousness of the material is preserved, at least for several weeks, when rapidly frozen at −70° C. and stored in the frozen state at −50° C. Preliminary electron microscopic observations carried out by R. W. G. Wyckoff have shown characteristic particles in some active preparations which have not thus far been seen in preparations from normal allantoic fluids or from fluids of eggs inoculated with normal fluids. These particles are of the same general size as viruses of the influenza type but are readily distinguishable from them.

The substrains have been carried through several additional serial passages. Deaths of the embryo are quite infrequent, and grossly little, if any, change is noted in the embryo or membranes. Further testing of the material in human volunteers will be done as well as more extensive laboratory investigations.

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The Effects of Vitamins on Phosphorus Metabolism in the Chick Embryo: 1. Vitamin D and the Utilization of Inorganic Phosphorus

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As a preliminary experiment in the biophysical use of radioactive and stable isotopes, we have undertaken studies to obtain quantitative data relative to the effects of vitamins on the metabolism of phosphorus compounds in the developing chick embryo. Our initial work has been with vitamin D.

The biochemical action of vitamin D has been extensively studied (*1*). The most attractive hypotheses as to its mode of action seem to be that the vitamin accelerates the conversion of organic phosphorus into inorganic (*1, 4*) or, at least, intensifies the turnover of phosphorus in the bone (*5*). This work was performed with immature animals. Our experiments indicate that the vitamin accelerates the turnover of phosphorus in the developing embryo.

Large brown eggs (New Hampshire) were injected with 0.1 ml. of an isotonic solution of NaH_2PO_4 with an activity of 639.5 counts/second, or 0.12 microcuries. (The efficiency of our Geiger counter equipment, as determined by daily checks with the Bureau of Standards sample of Radium D and E, No. 26, was 9.84 per cent.) A portion of the eggs also received 0.1 ml. of propylene glycol containing 20 units of vitamin D;

another portion, 0.1 ml. of propylene glycol only; and the final group, only the NaH_2PO_4. The eggs were sealed with sterile paraffin, marked, and placed in a modified Buckeye incubator with temperature and humidity control. Thirteen-day embryos proved convenient for analysis with a relatively high (40 per cent) survival rate.

The viable embryos were lifted with sterile forceps, cleaned of adhering membranes, and dropped immediately into liquid air. They were ground to a powder in a chilled mortar and the powder extracted several times with cold 10 per cent trichloroacetic acid followed by extracts with cold 5 per cent acid. The scheme of separation followed, with some modifications, that of Hevesy, *et al.* (*2*). The acid extract was filtered into cold, concentrated sodium hydroxide. The resulting solution was divided into three parts. From one aliquot we determined the average acid-soluble phosphorus compounds;

TABLE 1

Fractions	Activity: $\left(\frac{\text{Average counts/}\mu\text{g of phosphorus}}{\text{Counts from 0.1 ml. of original } NaH_2PO_4 \text{ solution}} \times 10^{+5}\right)$		
	Group receiving P* and vitamin D	Group receiving P* and propylene glycol	Group receiving P* only
Average acid soluble	0.530	0.522	0.633
Inorganic P	6.03	19.70	5.69
Adenosine P + inorganic P	8.12	4.00	2.18
Creatine P + inorganic P	4.15	3.64	3.32
Phosphatide P	2.33	1.65	0.825
Residual P (nucleoprotein)	3.02	2.10	0.285

P* = P^{32} in NaH_2PO_4.

the second aliquot was precipitated with 25 per cent barium acetate at pH 6.5, the precipitate was washed with dilute barium acetate, centrifuged, and a part dissolved in cold nitric acid. The solution was treated with ammonium molybdate reagent. This precipitate consisted of the inorganic phosphorus. The remainder of the barium acetate precipitate was ashed and the phosphorus determined. This fraction consisted of inorganic phosphorus plus adenosine phosphorus. The third aliquot was hydrolyzed with normal hydrochloric acid and 0.1 normal ammonium molybdate for 30 minutes at 40° C. The phosphorus released from the organic compounds precipitated. This fraction consisted of inorganic phosphorus plus phosphocreatine. The residue from the acid extractions was treated with an alcohol-ether mixture. The filtrate contained the phosphatide phosphorus, and the residue gave the so-called residual phosphorus containing mainly nucleoprotein phosphorus.

The phosphorus was determined in a Coleman junior spectrophotometer at 650 mμ, according to the procedure of Kitson and Mellon (*3*).

A summary of our results is given in Table 1. Detailed analyses for each embryo and for anatomical parts of 18-day embryos will be presented at a later date.

Our data reveal that the group of 6 embryos receiving the P* and vitamin D shows a higher specific activity for all fractions except inorganic P and the average acid-soluble P than the group of 5 embryos which received P* and propylene glycol and the 2 embryos which received only P*. The inorganic phosphorus value for the second group is inordinately high, but we can discover no contamination or error. These average values support the contention that vitamin D accelerates the over-all metabolism of inorganic phosphorus in the developing chick embryo. The effect is most marked in the adenosine, creatine, and phosphatide phosphorus fractions. Our data do not show any marked influence of vitamin D on the specific activity of the inorganic phosphorus fraction.

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Streptomycin Therapy in Experimental Tuberculosis of Guinea Pigs Infected Intracerebrally With Virulent Tubercle Bacilli[1]

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Up to the present time published data is not available concerning the effect of streptomycin in animals infected intracerebrally with virulent tubercle bacilli. The following is a preliminary report of such an experiment.

Twenty tuberculin-negative female guinea pigs weighing between 800 and 1,000 grams each were inoculated intracerebrally with 0.05 cc. of a culture containing 0.0001 mg. (dry weight) of a 7-day growth of H37Rv organisms in Tween-albumin liquid medium of Dubos (*1*). A small drill hole was made through the posterodorsal part of the skull, just to one side of the midline, and the organisms introduced by means of a tuberculin syringe and a ½″ No. 26 gauge hypodermic needle.

Ten animals were kept as untreated controls; the other 10 were started on streptomycin[2] treatment immediately after inoculation. They were given 4,000 μg at 7:30 A.M., 12:30 P.M., and 5:30 P.M., and 6,000 μg at 10:30 P.M., or a total of 18,000 μg/day. The drug was given either intramuscularly or subcutaneously.

During the third week after infection, both treated and control animals began to show signs of brain damage manifested by paralysis of the hindquarters, loss of equilibrium, and occasional convulsions upon stimulation. The control animals began to succumb on the 17th day, and all except one were dead by the 22nd day. The latter animal died on the 92nd day and developed increasing paralysis of the hindquarters for one week prior to death.

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[2] Streptomycin was supplied through the courtesy of Dr. James Carlisle, of Merck and Company, Rahway, New Jersey.