mapheresis, the gross appearance of the kidneys was quite normal but microscopically, in addition to the cloudy swelling and breaking down of the tubular epithelium, there was fatty infiltration along the basement membrane of the tubules and there were small areas of round cell infiltration in the convoluted portions. An occasional glomerulus showed atrophy together with hyalinization and thickening of the capsule.

Tissue obtained at 2 months showed a still more marked atrophy of the tubules. Large areas of round cell infiltration and a definite connective tissue replacement was seen all through the inner half of the cortical tubular region. Numerous glomeruli showed an increased thickening of the capsule, increased hyalinization and atrophy. Four months showed further atrophy and scar tissue formation. At 6 months, the gross changes were pronounced. The capsule stripped easily but left a roughened and dimpled surface. The cortex was greatly narrowed and it appeared to be marked with grayish-white streaks. Microscopic examination revealed a marked scar tissue replacement in the inner half of the cortical tubular region with bands of scar tissue radiating to the surface producing the dimpling. There was a great increase in the tubular degeneration, fatty infiltration, round cell infiltration and glomerular atrophy over that seen earlier in the process. The blood urea nitrogen was not increased at any time in these animals.

These findings indicate that a secondary contracted kidney may well follow a long standing low proteinemia as a result of tubular atrophy and scar tissue replacement. It would also suggest an explanation of why most so-called nephrosis cases that escape intercurrent infections, die of uremia and at post-mortem show scarred and contracted kidneys.

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The Action of Irradiated Ergosterol on Rats and Chickens.

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It is generally taken for granted that there is a parallelism between rickets, the percentage of ash in the bones, and the concentration of inorganic phosphorus in the blood, and furthermore that factors which prevent or cure rickets are associated with a tendency

to increase the bone ash and the phosphorus in the blood. In connection with infantile rickets, attention has been drawn from time to time by one of us to the fact that this disorder may be accompanied by a high concentration of inorganic phosphorus in the blood. In the course of an extended investigation, we have found that this same phenomenon may hold true for rats. Furthermore, a striking difference in this respect has been noted between the action of irradiated ergosterol and cod liver oil, when inadequate amounts of the former preparation are given. In a series of curative experiments it was found repeatedly that the inorganic phosphorus could be raised to normal concentrations, to 6 mg. or more per 100 cc. of serum, and that nevertheless no evidences of healing resulted, as judged by the "line test". Animals treated in this way had a low percentage of bone ash, about 30%, which is an amount indicative of rickets. These rats were about 4 weeks old, weighed approximately 50 gm. and had been fed the Steenbock rickets-producing ration plus 10 cc. of reconstituted dry milk. On the other hand, when cod liver oil was added to the diet, in amounts varying from 7 to 20 mg. daily, marked healing followed and the bone ash increased, but the concentration of inorganic phosphorus in the blood did not rise above 2 to 4 mg. per 100 cc. A result of this kind emphasizes the fact that the healing of rickets is not merely contingent upon a normal level of blood phosphate. It also shows the tendency of irradiated ergosterol to raise the phosphate concentration of the blood, quite apart from exciting any antirachitic or calcifying activity. When adequate amounts were added to the diet prompt and marked healing was brought about.

Recently chickens have been used by many in the study of rickets. For the past 3 years we have been carrying out experiments to ascertain the action of ultraviolet light, of irradiated ergosterol, and of cod liver oil on these animals. Without going into detail in regard to these experiments, we wish to point out in this connection two significant differences between chickens and rats in their reaction to specific antirachitic substances. In the first place it was found that whereas chickens are regularly protected against leg weakness by an addition of 1% of cod liver oil to their ration, a supplement of irradiated ergosterol equivalent to many times this amount failed to afford protection. It may be added that the ash of the bones was found to be comparatively low in the animals to which irradiated ergosterol had been given. This lack of response was all the more surprising, as chickens were found to respond readily to mild intensities of ultraviolet radiations and showed a high percentage of bone ash after an experimental period of 10 weeks.