as those observed with vesicular exanthema of swine virus. Were the correlation only between plaque morphology and type, it would be interesting but not particularly meaningful in a biological sense. However, the fact that differences in plaque morphology of a virus were correlated with extremes of pathogenicity in a natural host lends more than academic interest to the observations. The findings with polio viruses previously mentioned and those with the virus described in this report (*5*) suggest that the correlation of physiological and morphological plaque variations with host pathogenicity may reflect a phenomenon common to other species.

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Absence of Albuminlike Serum Proteins in Turtles

The differentiation of species of turtles of the genus *Pseudemys* by paper electrophoresis of serum proteins was reported recently (*1*). However, no turtle serum proteins comparable in electrophoretic behavior to human serum albumin were observed. Other workers (*2*) have reported marked differences between the electrophoretic patterns of turtles and snakes. A biochemical comparison of the total protein and albumin content of reptilian sera (*3*) revealed notably lower albumin values in turtles than in snakes. However, the particular salting out procedure of that study did not exclude alpha globulins from the albumin fraction.

Table 1. Rat, alligator, and turtle serum proteins (grams per 100 ml of serum). For this study, serum of one male specimen of Holtzman albino rat and of one male specimen of *Alligator mississipiensis* and pooled sera of three specimens of *Chelydra serpentina* were used. The "albumin" fraction from the serum of another specimen of *Chelydra* did give a faint biuret reaction.

Protein	Rat (g/100 ml)	Alligator (g/100 ml)	Turtle (g/100 ml)
Total protein	5.95	5.80	2.20
Albumin plus alpha globulins	3.12	1.80	2.03
Albumin	2.14	0.70	0.00
Alpha globulins	0.98	1.10	2.03
Other globulins	2.83	4.00	0.17

During our studies (*4*) with serum proteins of human beings and lower vertebrates with neoplasia, paper electrophoresis techniques did not reveal albuminlike components in sera of normal representatives of three major families of turtles. Turtle families and species studied were Chelydridae (*Chelydra serpentina*), Dermochelidae (*Dermochelys coriacea*), and Testudinidae (*Clemmys insculpta* and *Testudo gigantea*).

Sera were collected from clotted samples of blood obtained by cardiac puncture. Our paper electrophoresis was done with a Spinco apparatus, at 5 ma constant current for 16 hours. Paper strips were stained with bromphenol blue and were photoscanned and analyzed by means of the Spinco-Analytrol instrument. Specimens of human serum were included in each run. Rat and alligator serum proteins were compared with those of a turtle by a biuret procedure following a modified salt-ether fractionation (*5*) of the blood sera.

The turtle sera examined appear free of a human-like albumin serum protein component, according to electrophoretic analyses (Fig. 1). Ether-salt fractionation and biuret analysis did not consistently reveal albuminlike protein in the serum of *Chelydra* (Table 1).

The findings are provocative from the viewpoints of comparative biochemistry, physiology, and systematics. Albumin synthesis is a function that has long been ascribed to the parenchymal cells of the liver (*6*). Such cells are reported to be structurally cirrhotic-like in the liver of fish, amphibians, and reptiles (*7*). Interestingly enough, paper electrophoresis of the blood serum of Elasmobranchii (*8*) has revealed no component with the mobility of albumin. Correlations between liver histology and protein biochemistry are not available for reptiles. Such studies might be of phylogenetic value. Boyden and Paulsen (*9*) have emphasized the value of electrophoretic studies of serum proteins as a step toward understanding the biochemical evolution of the vertebrates. However, physical chemical criteria, in addition to paper electrophoresis, and protein analyses of greater sensitivity than the biuret reaction are necessary before one can satisfactorily define the nature of the presence or absence of "albumin" in the sera of turtles or other lower vertebrates.

The results reported here suggest an absence of a human-like serum protein with electrophoretic properties of albumin in more than one genus and family of turtles. Similar independent observations of Zweig and Crenshaw (*1*) are supported by our work.

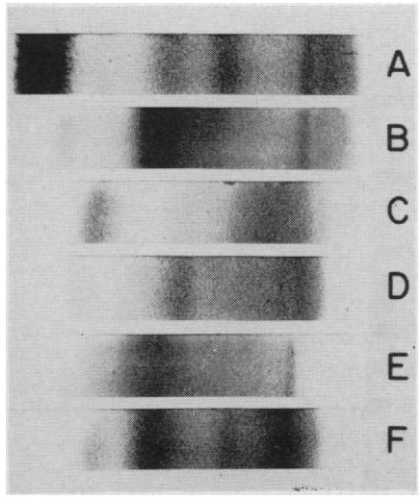

Fig. 1. Paper electrophoresis patterns of serum proteins of turtles and of the serum proteins of a human being (*A*) and an alligator (*B*) for comparison. Other patterns represent the turtle species *Dermochelys coriacea* (*C*), *Clemmys insculpta* (*D*), *Testudo gigantea* (*E*), and *Chelydra serpentina* (*F*).

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Inhibition of Ribonuclease by Polyacids

Heparin and other sulfated polysaccharides have been reported to act as competitive inhibitors of beef pancreas and rodent liver ribonucleases (*1, 2*). Two well-recognized effects of heparin have been reproduced with the polyacids