It has been known for a long time that the eye represents an important component in the architecture of the head (Gaupp, 1905, 1906; Versluys, 1922; Marinelli, 1936; Hofer, 1952; Van der Klaauw, 1948–1952; and many others). Comparative morphological (Gregory, 1933; Van der Klaauw, 1948–1952) as well as experimental studies (Twitty, 1930; Twitty & Elliot, 1934; Coulombre & Crelin, 1958) reveal that position and size of the eye have a direct bearing on topographical relations and structures in the head. Gaupp (1905) and Versluys (1902) concluded that tropidobasity is largely related, ontogenetically as well as evolutionary, to eye-size. And this in its turn is a necessary condition for a kinesis of the skull in reptiles and birds.

In 1792 Haller framed the rule that among related animals the smaller ones have relatively bigger eyes. This holds both for animals of one species and among the species (Franz, 1934; Van der Klaauw, 1948–1952; and many others).

It is surprising, however, that hardly any attention has been paid to three important questions that might arise from the foregoing. First,
what are the implications for the head structures? Secondly, how close should the taxonomic relationship be to make a comparison possible? Last, what is the biological meaning of Haller’s rule?

Obviously, the answers to these questions are closely allied to an evolutionary explanation. According to Rensch (1948), the relative size of an organ will have a major influence on the course of the evolution of the species. Consequently, a good deal of evolutionary trends can be understood from allometric phenomena. In Rensch’ opinion allometry is one of the causes of evolution.

A preliminary comparison of the size of orbits in Viperidae gave the impression that eye-size should directly be correlated with biological demand and that, consequently, smaller animals had to be tropidobasic (Dullemeijer, 1959).

This paper will present some investigations into the relation between the eye-size and the parts of the skull, the size of the retina, and the number of sensory elements, in a number of viperid snakes in view of the above-mentioned questions.

II. MATERIAL AND METHODS

The following species were measured:

45 *Crotalus ruber ruber*  
36 *Crotalus viridis helleri*  
4  *Crotalus viridis helleri*  
39 *Crotalus cerastes laterorepens*  
17 *Crotalus atrox*  
39 *Vipera berus*  
28 *Vipera ursinii*  

45 *Crotalus ruber ruber*  
36 *Crotalus viridis helleri*  
4  *Crotalus viridis helleri*  
39 *Crotalus cerastes laterorepens*  
17 *Crotalus atrox*  
39 *Vipera berus*  
28 *Vipera ursinii*  

- 45 *Crotalus ruber ruber*  
  - coll. Dr. L. M. Klauber, San Diego, in the tables indicated by K.
- 36 *Crotalus viridis helleri*  
  - coll. Dr. L. M. Klauber, San Diego, in the tables indicated by K.
- 4  *Crotalus viridis helleri*  
  - coll. Zoological Laboratory, Leiden, in the tables indicated by Z.L.
- 39 *Crotalus cerastes laterorepens*  
  - coll. Dr. L. M. Klauber, San Diego, in the tables indicated by K.
- 17 *Crotalus atrox*  
  - coll. Zoological Laboratory, Leiden, in the tables indicated by Z.L.
- 39 *Vipera berus*  
  - coll. Rijksmuseum van Natuurlijke Historie, Leiden, in the tables indicated by N.H.
- 28 *Vipera ursinii*  
  - coll. Naturhistorisches Museum, Vienna, in the tables indicated by V.