cerned, but it does not refute the experimental approach to the main problem (7).

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New Chromosome Number for the Order Caudata

During recent investigations of the chromosomes of the ambystomid salamanders occurring in the Pacific Northwest, it was found that one of the members of the family, *Rhyacotriton olympicus,* has a haploid chromosome number of 13; somatic tissues revealed a diploid number of 26. As far as can be determined from the literature (*1*), this constitutes a new chromosome number for the family Ambystomidae, and it is also the first such number recorded for the entire order Caudata. All other ambystomid salamanders known cytologically have $n = 14$, $2n = 28$, as is summarized in Table 1.

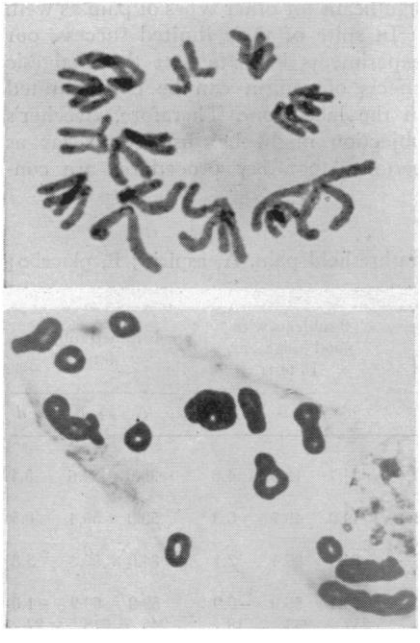

Fig. 1. Chromosomes of *Rhyacotriton olympicus* at meiotic anaphase I (top), showing 13 sets of sister chromatids, and at late diplotene of the meiotic prophase I (bottom), revealing 13 bivalents.

The chromosome numbers for *Rhyacotriton olympicus,* $n = 13$, $2n = 26$, were determined from counts in cells obtained from meiotic testes and from regenerating liver tissue. The material was prepared by a modification of the aceto-orcein squash technique of La Cour. *Rhyacotriton olympicus,* the only species in this genus, is found along the banks of cold streams of the Coast Mountains from Northern California to the Olympic Peninsula (*2*). Counts were made on the cells of 12 individuals taken mainly in the zone of intergradation of the two subspecies *olympicus* and *variegatus,* and at least 20 counts were made per individual.

The morphology of the haploid set reveals eight metacentric chromosomes and five submetacentric ones. If the chromosomes are arbitrarily divided into longer and shorter ones, the set can be formalized for this species as $4M$, $2S$, $4m$, $3s$, where M = metacentric, S = submetacentric; the lower-case letters denote the shorter chromosomes of the set. The longest chromosome at anaphase II averages 19 μ, the shortest averages 6.5 μ. The ratio of the longest chromosome to the shortest for the haploid set is 2.9. Chiasma frequency was determined at diplotene of prophase I to have a mean of 39, with a range of variation from 36 to 42. The number of bivalents showing a minimum of two chiasmata was five. Figure 1 (top) shows the haploid set at anaphase I, and (bottom) the 13 bivalents at diplotene. As in other studies of the Caudata, no evidence for heterochromosomes was found in this species.

In addition to being of interest as a new chromosome number for the order Caudata, this finding allows for some speculation regarding the systematic position of the genus *Rhyacotriton.* While in some groups the chromosome number varies even among species of the same genus, this has not been true of the salamanders. If, as was stated by Matthey (*3*), "A chromosomal discontinuity corresponds to the familial discontinuity of the systematicians; within the families the fundamental homologs of the chromosomes are respected . . . ," it would seem that a taxonomic revision might be indicated. Perhaps this species belongs to a new and separate family. On the other hand, it may be that this merely represents an evolutionary offshoot not divergent enough to enjoy a separate family status but still indicating a genus rather remote from the main group of ambystomids. Other cytological and morphological evidence confirms the rather unique character of this salamander with respect to other ambystomids. In a similar situation in another family of Caudata, the Salamandridae, Fankhauser (*4*) found that American species of *Triturus* have a diploid chromosome number of 22, while European species and the Japanese *Triturus pyrrhogaster* have 24. All these species have been allowed to remain in the same genus, aside from the recent shift of the Pacific Coast species to the genus *Taricha* which was based on priority and not on cytological considerations (*5*).

Table 1. Chromosome numbers in ambystomid salamanders.

Species	Haploid No.	Diploid No.	Investigator
	Ambystoma		
A. mexicanum	—	28	Wickbom, others (*1*)
A. tigrinum	14	28	Parmenter; Carrick (*1*)
A. maculatum	—	28	Henley and Costello (*6*)
A. jeffersonianum	14	—	Kezer (7)
A. gracile	14	28	Humphrey (7)
A. macrodactylum	14	28	Humphrey (7)
	Dicamptodon		
D. ensatus	14	28	Humphrey (7)
	Rhyacotriton		
R. olympicus	13	26	Humphrey

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Serum Diphosphopyridine Nucleotide Linked Enzymes in Delirium Tremens and Allied Conditions

During the past few years some transaminase and dehydrogenase enzymes as well as fructoaldolase (aldolase) in biological fluids have received considerable attention in various pathological conditions in man—for example, in myocardial infarction and in acute liver cell damage. These enzymes are widely distributed in the cells of the body, and the working hypothesis is that they are liberated into extracellular fluid in pathological conditions with localized or diffuse cell damage (necrosis) in certain tissues. The amounts of enzymes liberated are then approximately proportional to the magnitude of the tissue damage. The enzymes may be deter-