(4) The experimental conditions in the two series are not comparable if his description is complete.

(5) Blood pressure depression by light rays has been demonstrated by many investigators, both experimentally and clinically, by a great variety of methods.[3]

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A MORPHOLOGICAL EXPLANATION FOR THE FAILURE OF NECTURUS TO METAMORPHOSE

THE feeding of thyroid and other substances that effect amphibian metamorphosis has failed to cause this change in Necturus. Such feeding readily causes *Ambystoma tigrinum* to metamorphose.

Comparison of the aortic arches of *Ambystoma tigrinum* and Necturus reveals the fact that there are four arches in Ambystoma and only three in Necturus. This raises the question as to which arch has been reduced in Necturus. Investigators in general consider that the fifth arch is lost and that the most posterior arch is the sixth. This conclusion conforms to the usual behavior of the fifth arch in other vertebrates. However, there is evidence that the ventral portion of the sixth has been lost—three, four and five remaining. The evidence is based on these facts:

(1) That all aortic arches in Necturus supply external gills. True external gills are not found on arch six in any amphibian.

(2) The aortic arches follow visceral arches numbers three, four and five, the sixth visceral arch being reduced to a mere vestige.

(3) A vestige of the ventral portion of the sixth aortic arch has been found.

The spiral valve and most of the septa of the bulbus are also absent in Necturus. All these structures are of great importance at the time of metamorphosis of Ambystoma and the absence of these seems to be responsible for the failure of Necturus to react to metamorphosing substances. Without these structures there is no possible way by which Necturus could even partially separate pulmonary and systemic blood. Blood going to the lungs would thus be of exactly the same nature, so far as oxygen content is concerned, as that going to the body. Being thus unable to develop an efficient pulmonary respiratory system, it is not surprising then that Necturus retains its gills.

To test the above theory the ventral portion of the sixth arch was ligated in Ambystoma, producing a specimen with aortic arches similar to those in Necturus. This operation was performed on a number of specimens, which were placed in a tank with an equal number of controls. All were treated with metamorphosing substances. It was soon evident that the gills of the controls were being resorbed, while the gills in the Necturus-like specimens were still full length and in perfect condition.

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HALIBUT FISHING

A RECENT report by the International Fisheries Commission reveals that, should the present rate of halibut fishing be continued for any length of time, the industry will be reduced to insignificance. Accordingly, a movement to save it is well under way, and stringent regulatory measures have been proposed.

It is pointed out that not only has there been a fall in the abundance of fish, especially on the older banks, which has fallen to 16 per cent. of the abundance in 1906, but there has been a decrease in the size of the fish, this being regarded as especially serious because of the very slow growth of halibut. As an adult fish is from twelve to twenty-five years old, the fish to be caught in the next ten years are already hatched and the yearly abundance for that period has been established. If these fish are greatly reduced in numbers and the present intensity of the fishery is maintained, according to the commission, the outlook for a stock of spawning fish sufficient to maintain the supply is rather hopeless. In fact, few mature fish are now found on the older banks.

Although there is a complete cessation of halibut fishing for three months each year, this measure is not adequate. The commission recommends as a minimum requirement that the halibut fishing be limited annually to some fixed proportion of the existing stock. In agreement with the best scientific opinion, it concludes that the taking of a fixed proportion of the halibut equal to that at present taken might ultimately stabilize the industry, since there are indications that the fish could survive under such conditions. Another measure proposed is the closing of two "nursery areas," one off Massett Graham Island, B. C., the other off Noyes Island in southwestern Alaska. In fact, the ultimate closing of all such areas is recommended. Furthermore, general restrictions are regarded as indispensable.

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[3] Laurens, Henry, *Physiological Rev.*, 1928, viii, 1; Mayer, Edgar, "Clinical Application of Sunlight and Artificial Radiation," 1926, 130–31, Baltimore.