striking, but the demonstration of electrical currents in the human body would be usually regarded as impossible without a galvanometer. These difficulties are solved by the rather simple experiments cited below.

Recently, while making a nerve muscle preparation, the thigh muscles of the left leg of the frog were removed and the nerve on the same side isolated but not sectioned. The body was well moistened with physiological saline and lay on a glass plate which was also well moistened. The toes of the left foot were held in the left hand, while forceps, held in the right hand, were accidentally placed upon the body of the frog. Immediately a violent contraction of the muscles of the left leg occurred. This was so unusual that we investigated this further. The same results were obtained repeatedly. It must be noted here that one metal was used instead of two as in Galvani's experiment, and in place of the other metal the human hand was used. The current stimulating the nerve might have been due to the difference in potential between the metal and the hand, and for that reason we substituted the right finger for the metal previously used and obtained the same results. We therefore concluded that the nerve was stimulated by the action current of the human body, the electrodes being the fingers of the right and left hands and the indicator or the galvanometer being the contractions of the frog's muscles.

The same experiment was tried on a number of frogs and in every case we obtained the same results, although more striking in some preparations than in others. We found that by making contact with any part of the frog's body or even the saline solution on the plate the muscles contracted.

When a non-conductor was interposed between the toes and the hand we found that no contraction took place. When a non-conductor such as wood was used for the right electrode no contraction took place. We at first thought that the action current involved was that produced by the beating human heart, but the absence of the rhythmical contractions in the muscles of the frog negates this.

It has been noted in some cases that the contractions were very violent, even tetanic, and immediately afterwards hardly noticeable. We have no explanation to offer for this other than the varying electrical currents in the body.

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AN EXCEPTION TO DOLLO'S LAW OF THE IRREVERSIBILITY OF EVOLUTION

IT has been claimed that most cases of apparent reversion to a primitive type in specialized organisms—such as the occurrence of three toes in the horse that Cæsar rode, or a reversion to the primitive number of petals in flowers, etc.—are to be explained simply as additions of supernumerary parts, comparable to polydactylism, or the addition of supernumerary digits to those normally present in man, cats, etc. Since so many cases of an apparent reversing of the evolutionary process apparently have to do with the number of the various structural features present, and are therefore open to the objection that we may be dealing with merely an addition of supernumerary parts to those normally present, it may be of some interest to cite a clear case of reversion to the primitive condition in structures in which there can be no possible question of the addition of supernumerary parts.

In the fruit fly *Drosophila*, as is true of practically all Diptera, there has been such a marked specialization of the metathoracic region that the sclerites of this segment of the thorax have been profoundly modified and reduced, especially in the tergal region; and the metathoracic wings have been reduced to mere knobbed threads, the halteres, which would not be recognized as the vestiges of wings, if we did not know that they are modified wings from their mode of development, etc. Dr. Morgan, however, has recorded a mutant of *Drosophila* which he describes as having a "double thorax," apparently not realizing the true nature of the parts in the

mutant in question. The metathorax of this mutant has apparently reverted to a condition approximating that occurring in the ancestors of the Diptera, in having a well-developed metanotum and other metathoracic sclerites, while the wings of this segment of the thorax, instead of being mere knobbed threads as in practically all Diptera, have become developed as comparatively broad wings, with a well-defined venation. I am hoping to be able to make a careful anatomical study of the thoracic structures of this mutant in the near future, and have offered this brief account merely as a preliminary note of an investigation which will be given more in detail in a later publication.

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SCIENTIFIC BOOKS

JONSTON'S NATURAL HISTORY OF FISHES

Through the courtesy of Mr. Carl L. Hubbs of the University of Michigan, I have been able to examine a very rare book, seldom recorded in bibliography, the particular edition apparently not at all.

Its author is John Jonston, or as he writes it, Johannes Jonstonus, M.D., and its title page reads:

> Johann Jonstoni | Historiae Naturalis | de | Piscibus | et Cetis | Libri V | tabulis quadraginta septem | ab illo celeberrimo | Mathia Meriano | aeri incisis ornata | ex scriptoribus tam antiquis | quam recentioribus | maxima cura collecti | quos | ob raritatum denuo | imprimendos suscepit. Franciscus Josephus Eckerbrecht | Bibliopola Heilbrunnensis | MDCCLXVII.

Following this and bound with it is another volume, with the same title except for the words "de Exangibus Aquatilis Libri IV., tabulis viginti." This treats of invertebrates.

As this work bears the nominal date of 1767, subsequent to the "Systema Naturæ," it merits consideration in the interests of stable nomenclature.

I find that it is throughout a compilation from earlier authors, the latest of which is Piso's edition of Marcgrave's "Historia Naturalis Brasiliæ," printed at Leyden in 1648. The sources of information are carefully and apparently accurately given in side-headings. There is some evidence of a system of classification. Book first, for example, treats of marine fishes. Title of those which are pelagic, Heading 1, of scaly pelagic fishes, and Article 1, "de Asellis" of various "cods." Most of the forms mentioned are indicated by Latin nouns, the Greek form often added, and occasionally a descriptive adjective gives a binomial form. I find, however, no trace of a binomial system of naming; the word species I have not noticed and the word genus, occasionally used, has no technical significance, meaning merely "kind."

The names used by Jonston could not enter scientific nomenclature even if the date of the publication were subsequent to 1758, a matter which may be open to doubt.

In Bosgoed's "Bibliotheca Ichthyologia et Piscatoria," 1874, page 9, is recorded a treatise by J. Jonston, with a similar but more extended title, said to be in five parts in two divisions ("dln.") with the dates 1650 to 1653, issued at Frankfort on the Main.

Apparently the volume before me is a reprint of the second "dealing" of this general work, as it bears a different date and the name of a different publisher. Bosgoed speaks of a new edition in Amsterdam in 1718, and an edition in Dutch in Amsterdam in 1660, translated from the Latin by M. Grausius. In advance proof sheets of the second edition of Dean's "Bibliography of Fishes," references are given to about a dozen editions in Latin or Dutch. One of these is dated 1677, but none 1767.

It may be questioned whether the date "MDCCLXVII" given on Libri IV. and V. alike is not a misprint for MDCLXVII. The appearance of the book and the absence of reference to any author later than 1648, would point in this direction. In any event, the names merit no consideration from systematists as, if really issued in 1767, it is merely an unmodified reprint of a pre-Linnæan,