the neural tube, the latter were stimulated to differentiate and develop into a complete new hemisphere, which in both structure and size was apparently a completely normal hemisphere. We can, therefore, answer the first question in the affirmative. A group of axones growing into a collection of primitive cells is able to cause them to regenerate a complete new part of the brain.

To determine the stimulating effect of a larger nerve trunk than usual on neuroblasts, an extra olfactory sac was transplanted beside the normal one in such a way that the ingrowing nerve trunk could establish connection with the hemisphere. Here, though, in some instances the olfactory nerve did not reach the cerebral hemisphere. In those cases in which it did, the hemisphere increased in size markedly over the normal hemisphere. The results obtained showed that the growth into the cerebral hemisphere of more axones from olfactory neurones than normal produces an enlargement of an embryonic nervous cell mass, since the hemispheres in such operated embryos eventually grew to be approximately 20 per cent. greater than normal.

The experiments show, then, that the removal of an end organ results in the failure to grow to full size of the part of the brain with which it is connected, that ingrowing fibers from such an end organ can stimulate the primitive ependymal lining of the neural tube to form a new portion of the brain and that a superabundance of such ingrowing nerve fibers can stimulate the normal brain to increase in size approximately 20 per cent.

To put it in another way, the above experiments show that nerve cells grow, first as a result of an inherited potential for differentiation, and secondly as a result of stimulus derived from the contact of telodendria from other neurones. This latter stimulus is, in Amblystoma, sufficiently strong to produce regeneration and hyperplasia of the cerebral hemispheres. Functional activity is not excluded as a factor since we do not yet know what occurs when neurones establish connections within the central nervous system. The exteroceptive phase of functional activity at least has little or no effect.

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THE MASKELL COLLECTION OF COCCIDÆ

WILLIAM MILES MASKELL was registrar of the University of New Zealand. He pursued the study of the Coccidæ when not busy with the arduous duties of his official position. His first paper was published in 1879. With the exception of four years, he published an annual illustrated memoir, 1879-1898, in the *Transactions* of the New Zealand Institute. In addition to the memoirs about twenty other papers were published. These included a very large number, several hundred, new genera and species. He had the advantage of being located in the midst of a marvelously rich coccid fauna.

Many of the species of Coccidæ have proved to be of economic importance. This has resulted in the discovery of many new forms. The description and study of these new forms has brought to light many characters either not figured or not described or noted by Maskell, so that his genera and species needed to be restudied in order to determine their correct affinities and to permit of their proper location in the classification of the family. The officials of the U. S. Bureau of Entomology were able through the assistance of Mr. T. W. Kirk of the New Zealand Department of Agriculture to borrow this collection, which reached Washington in 1909.

The remounting and study of the collection was begun immediately. The first results of these studies, thirteen years after the reception of the collection, have appeared and deal with the species of Maskell that have been made the types of genera by Maskell and others. This contribution is by Harold Morrison and Emily Morrison, printed in the *Proceedings* of the U. S. National Museum for 1922.

There is included a discussion of the species belonging to seven subfamilies, and thirty-seven genera and subgenera. The authors have attempted to describe each species so fully and to figure all parts so carefully that future workers would have no need to consult the original type-material. How successfully this has been done only time will show, for with the advancement of the classification of a group, each generation frequently uncovers characters not hitherto used, so that it is very difficult for the workers of one generation to unearth all the characters that will be used by succeeding gen-

erations. Long but concise carefully prepared descriptions covering all parts are given. These are amplified by the numerous figures of the insects as a whole and of their various parts in great detail. The figures of a species are grouped together and printed as text-figures. While it is always of importance to have a figure near the description for comparison, yet the effect and detail of figures printed upon plate-paper is so much better than those printed on ordinary print-paper that convenience should have been overlooked, particularly in a work of such value to future students of the Coccidæ as this one. Figures where one half shows the dorsal surface and the other half the ventral surface are being produced by many authors. This is to be deplored because such figures never give the perspective of the insect as a whole that can be secured from complete figures of each surface while there is always confusion and doubt as to the accuracy of the structures located on and near the meson, and so long as the government is financing the project, the question of expense should not be a serious one. This is particularly unfortunate in figures of the anal ring, a structure that is going to be used much more in the future than in the past, especially in the subfamily Eriococcinæ and its allies. The figures showing the anal ring are all on too small a scale or very indifferently done and do not bring out their pertinent characteristics. An admirable feature of this contribution is the attention given to other individuals than the adult female, the first nymphal stage and the adult male where available being described.

This is one of the very best studies of the Coccidæ made by an American in many years, regardless of my criticisms, and the authors are to be congratulated on starting this series of studies with such a thoroughgoing piece of work. It is to be hoped that they will follow the policy of Maskell and publish at least one large contribution each year until the study is completed. If our National Museum is to retain its supremacy so far as the Coccidæ are concerned it must be by contributions to their study and not by number of insects in cases.

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SCIENTIFIC EVENTS

SHAD INVESTIGATIONS IN CONNECTICUT

AN investigation of the cause of the marked depletion of the Connecticut River shad is being undertaken by the Connecticut State Board of Fisheries and Game. The commercial catch of shad has decreased alarmingly since 1919. The number of eggs obtained for artificial propagation has also decreased during recent years. The work now in progress includes: (1) Experimentation with methods of catching shad for spawn taking, (2) a study of the feeding habits, periods of migration and other phases of the life history of the shad, (3) studies of the enemies of larval and young shad, of parasitism and of other phases of pathology, (4) a detailed study of ecological conditions, including pollution, of the tributaries of the Connecticut in which shad are known to spawn, and (5) tagging of adult shad in an attempt to follow successive migrations. Another experiment is designed to test the possibility of furnishing comparative security to young shad by retaining a part of the product of the hatchery in specially prepared ponds freed from other fish.

The staff engaged in this work includes: Mr. J. W. Titcomb, superintendent of the fisheries and game of Connecticut; Dr. P. H. Mitchell, of Brown University, director of the investigations; Dr. Emmeline Moore, who is enabled to undertake this work through the courtesy and cooperation of the New York State Conservation Commission of which she is biologist; Dr. J. E. Blair, of Leland Stanford University; Mr. H. E. Gallup and Mr. F. B. Littlefield, of Harvard Medical School.

The Connecticut legislature has appropriated $10,000 for this work. The investigations will be continued through the summers of 1923 and 1924.

PASTEUR CELEBRATIONS IN FRANCE

THE official French celebration of the centenary of Pasteur began in Paris on May 24. According to an article in the *British Medical Journal* many delegates from universities and institutions throughout the world attended a reception given by the president of the French Republic. On the following morning the delegates were welcomed by Dr. Roux at the Pas-