Here again, while a society of psychologists might properly discuss the causes of this limitation, in an address confined to generalities, it may be more profitable to point out that daily life consists in the application of such psychological knowledge as is at hand. How could Bismarck and Gladstone direct contemporary history except by superior insight into the way men act and the methods of influencing their actions? What have Wagner and Browning done except excite interest and emotion? The conduct of every profession and of every business is chiefly based on the adjustment of thoughts, feelings and actions. Systems of government and education are simply methods for controlling and directing the human mind. Now, of course, all this is done by the rule of thumb entirely uninfluenced by psychology as a science. The savage who kills a bird with a stone is not thereby shown to be a zoologist and a physicist. Still he does have a kind of knowledge of the habits of animals and of the laws of projectiles, whence have developed the sciences which, in the course of time, have turned back to daily life those applications of science in which modern civilization consists. Whether the history of the material sciences will be repeated in the case of the mental and social sciences it is not possible to say or to gainsay. There are at present indications of the application of psychology in the treatment of diseases, in education and in other directions. Evolution, careless of the individual, has proceeded with boundless waste; certainly we are now interfering with its course for our benefit. It may be that some day the applications of material science will be subordinate to those of psychology.

These things lie on the knees of the gods. What the future will bring we do not know, but the past is ours. When we regard the fifty years of this Association or the century now ending we cannot fail to see that it has been an era of science. German music, English poetry, the modern novel—these are great achievements, but scarcely comparable to the forward movement in science. The older sciences have been reformed and new departments have been established. But amid all this scientific progress nothing has been more notable —at least from my own partial point of view—than the development of psychology into a science rivaling in activity and fruitfulness the other great sciences.

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THE SENFF ZOOLOGICAL EXPEDITION TO THE NILE VALLEY.

THE chief object of the expedition was to procure the life-history of *Polypterus* and its bearings upon the problem of the relation of the Crossopterygian fishes to the Amphibia. In the last few years the former theory that Amphibia sprang from Dipnoan fishes has gradually given way to the present view that *Dipnoi* are to be regarded as parallel to Amphibia from a common Crossopterygian origin.

Several very successful expeditions have been recently sent out to procure material for the embryology of Dipnoans, notably that of Richard Semon from Jena and that of Graham Kerr from the University of Cambridge. The former secured the complete life history of *Ceratodus*, and the latter brought back the embryology and complete life history of *Lepidosiren*, a South American form. In the meanwhile nothing has been done upon the development of *Polypterus* because of the exceptional difficulties which stood in the way of procuring material. The fish is abundant in the unhealthy equatorial zone of Africa, being recorded on the West Coast rivers as well as in Central Africa. It is also found in the Nile, but the Upper Nile, where it probably occurs in greatest abundance, has not been open to

naturalists during the occupation by the Mahdi.

Upon learning of the importance of this investigation, Charles H. Senff, Esq., of New York City, very generously contributed the greater part of the funds for the purpose, and the full equipment was made by the Zoological Department of Columbia University, with the assistance of Professor Osborn. Mr. N. R. Harrington, Fellow in Zoology, and Dr. Reid Hunt, Tutor in Physiology, volunteered to go to any part of Africa where it seemed most probable that embryonic stages could be secured. On reaching London they consulted with Dr. Boulenger and Professor Günther, also with Mr. Henry M. Stanley and Miss Mary H. Kingsley. The advice of these and many other naturalists and African explorers being strongly against the West Coast, it finally appeared best to choose the Nile Valley. The progress and results of the work may be extracted from Mr. Harrington's report. H. F. O.

Leaving New York on April 23d, we spent two weeks in London, making inquiries about Old Calabar, the Congo, Senegambia and Egypt. The rains having been prevalent on the West Coast for a month, the presumption was that the fish had already spawned there. Further, information was gathered in London which led us to think that *Polypterus* spawned in Lake Menzaleh, a connection of the delta of the River Nile.

On May 26th we reached Cairo, where permission to fish, interpreter, assistant and outfit were obtained. We were received by the Under-Secretary of State, Clinton E. Dawkins, as guest of the Egyptian government, and given laboratories and apartments in the capacious Fisheries plant near Damietta. The sympathy of the Egyptian government with pure scientific work was demonstrated by the repeated favors shown us.

But after three weeks' search we found that *Polypterus* did not occur in Lake Menzaleh during the low Nile period, and starting for the nearest point on the river we searched along the banks of the Nile until we came upon several *Polypterus* near Ras-el-Ghelig. From this point we explored carefully for 377 miles, having as many as thirty fishermen at work at one time in promising regions. The result was that on June 22d we settled down at Mansourah, forty miles from the sea, where we anchored for the summer over what was then the best *Polypterus* fishing ground not closed on account of the Anglo-Egyptian campaign.

The fish came in slowly, but, as a result of this, there was abundant time to study, to carefully inject, and to make the long-wished-for observations on living material.

The Nile being especially late in coming down, we remained at Mansourah until August 18th, and in our two months' stay accumulated a large number of the fish, beside very interesting and valuable cytological material from *Mormyrus*, *Malapterurus* and other Nile forms. After the 18th of August, when the tremendous flooding makes fishing in the river impossible, we worked in the canals, and, although we obtained fish as late as August 30th, the eggs were still immature. We sailed from Port Said September 10th.

As to the material brought back, it includes some beautiful invertebrate collections made in the Red Sea, numerous Elasmobranchs, lizards and general collections from the eastern Mediterranean, an admirable collection of Nile fishes (on which the Napoleonic expedition has left little undone in a systematic way), a still larger collection of the salt and brackish water fishes of Lake Menzaleh, and a considerable amount of morphological, neurological and cytological material of great interest.

N. R. Harrington.