

Hall and Prof. J. S. Newberry, members of the original committee which suggested the congress; Prof. H. S. Williams, and Prof. Persifor Frazer, who were elected by the American association for the advancement of science at its Ann Arbor meeting. These four constituted the American committee selected by the A. A. A. S. Besides these, Prof. Brush was elected by this committee under the powers vested in it. Mr. J. F. Kemp (asst. to Prof. Newberry), Mr. H. B. Patton (student), and Mr. H. E. Miller (chemist), from America, also appeared on the roll of the congress. Mr. McGee, representing Major Powell and the U. S. geological survey, arrived after the session had commenced.

In all, 255 members were in attendance, of which 163 were from Germany, and the rest mainly divided between Italy (18), Austria-Hungary (16), Great Britain (11), France (10), United States (9), and Belgium and Russia (6 each).

A detailed report of the committee, giving the debates in part, has already been completed.

LOCALIZATION OF FUNCTIONS IN THE BRAIN.

HAPPY those who in the rapid revolutionizing of brain-physiology, which the last few years have brought about, have kept abreast of the current. For the new publications are so minute and rapid that, once left behind, there is no hope of catching up. The vivisectional results of Goltz, Ferrier, Munk, Luciani, and a host of others, with the rather rough polemics which have characterized the German writings on the subject, must have given to many the impression of an almost desperate field where no two experimenters could agree as to the facts, and no one, not himself an experimenter, could critically judge of the relative merits of the investigations published. The researches of Munk in particular, professor at the veterinary school in Berlin, seemed to be on such a vast scale, had such an imposing clearness, were set forth with such an air of *überlegenheit* over all comers, and above all presented such an exact correspondence of facts with theoretical requirements, that it was hard to know just what to think of them. Everyone's else researches sounded clumsy and immature in comparison. And yet their very absoluteness awakened suspicion. Munk seemed too clever, his neatness more French than German. Nature does not often yield so exactly balanced a sheet of accounts with our laboratories, especially those of physiology. Results are apt to be more conflicting, and vary more from one

versuchsthier to another. And so in spite of Munk's apparent superiority, many lookers-on have secretly felt as if the ruder style of Goltz and others, and their vaguer conclusions, would prove to be more in the line of final truth.

Professor Christiani's little book strongly helps to corroborate this view. Munk is a strict localizer of functions. By his extirpations in dog's brains he thought he had mapped out the exact part of each occipital lobe which presides over the sensibility of each part of the retinal surface. He said that blindness, sensorial and intellectual, total and irreparable, follows complete ablation of these lobes; and when Herr Christiani in one of the memoirs republished in this volume, announced his observation that rabbits from which the cerebral hemispheres were entirely removed, would, nevertheless, steer clear of obstacles in their path as they loped about the room, Munk came down upon him with a tone so much resembling divine retribution that all bystanders must have thought it impossible for the younger investigator ever to show his face again. But this was reckoning without the resources of experimental physiology. Professor Christiani comes up smiling in the pages before us, and, we think, shows himself decidedly the better man of the two. Not only does it appear from Munk's subsequent confession that his first would-be repetitions of Christiani's experiments on rabbits were injudiciously performed, but we think we also see a decided obstinacy and lack of candor in Herr Munk's refusal to admit the injudiciousness. As well as a mere reader can judge, Christiani seems to have really proved that the avoidance of obstacles during locomotion is in rabbits a function which may be performed by the aid of visual centres *below* the hemispheres of the brain; in other words, that his rabbits were not really blind.

The latter half of the book is occupied by an historical survey of the localization of the function of vision, a survey of which the evident purpose is to show by a cumulation of evidence, how one-sided Herr Munk's observations, and how absolute his inferences, have been. This survey is to be recommended to all who would like to review this interesting chapter of physiology. It leaves naught to be desired in the way of learning, and its polemic tone is courteous. It shows an amount of evidence against any *exclusive* connection of vision with the occipital lobes, which, to our mind, is quite overwhelming when brought together in this way. It suggests, as Goltz does, that much of the blindness resulting from lesion of the occipital lobes may be due to an *interference* with lower visual centres spreading from the irritation of the wound. But, though breaking down

the absolute form of Munk's localizations, Professor Christiani does little to put any other positive and definite conceptions in their place, and one may say as a last result, that he leaves the subject of division of labor in the brain as obscure as he found it. There are some other important and interesting experimental discoveries in the book, to which we lack space for reference. It may be added, in a general way, that the question of localization seems now in a far more hopeful state than ever before. The distinction of relative centres and absolute centres, introduced by Exner, in his statistical study of human brain lesions, bids fair to be a fruitful conception, if it can ever be intelligently worked out. A recent article by Exner in the *Biologisches centralblatt* (band v., hefte 1 und 2), takes a mediating position and tries to show that the facts reported by Goltz and Munk are far less at variance than the reporters themselves think. It is a very praiseworthy article, and should be read by all those who are interested in the subject of Professor Christiani's work.

GEOGRAPHICAL NOTES.

ADVICES from the Pacific coast afford some details in regard to the journey of Lieut. H. T. Allen and his companions, though the complete report is of course reserved for headquarters. There is a good deal of confusion of names, distances, and positions in the press reports, from which, however, we are able to gather that the party ascended the Copper or Atna River, and explored its northern and western branch to its source, a distance which, omitting irregularities of the stream, must be between two and three hundred miles. The Copper River had been explored by Serebrannikoff to a distance of some fifty miles from the mouth in 1848; and several prospectors have been on the river since the purchase of the territory by the United States, but no record, except in newspaper articles, has been kept of their wanderings. The branch explored by Lieutenant Allen and the eastern branch are about of equal size; the latter is believed to rise not far from the head of Lynn Canal. They found the river extremely rapid, with many cataracts, and having in some places a fall of seven feet to the mile. Its width is variable, sometimes several miles, including large islands; at others but a few hundred feet. There are many glaciers near it, and the active Wrangell volcano rises almost from the river. Remains of the mammoth were seen; the color of gold was found in the river-bed, and copper and silver ore brought back, the former from the range in which the river heads. A portage was made across this range to the sources

of the Tananah, where there are a number of extensive lakes. The river was reached about 125 miles above the point to which it had been explored, and it and the Yukon were followed to the sea. Game was not very abundant, fish being the chief reliance of the Indians. No casualties occurred, the chief difficulty being to obtain labor, since the Indians were averse to work. Two miners and several Indians were with Lieutenant Allen's party, which found some difficulty in subsisting on the country. Great credit is due Lieutenant Allen and his companions, whose journey may be compared to that in which the celebrated Robert Campbell discovered the sources of the Yukon.

Lieutenant Cantwell's recent exploration of the Kowak River was made by a party consisting, beside the commander, of two seamen; C. H. Townsend, naturalist; an interpreter; and eight or ten Innuits. The river was entered July 2 with a steam launch and two canoes. At the rapids Townsend remained with the launch, the rest ascending in skin canoes. They reached with great difficulty a cañon some 300 feet deep and very narrow. The boats were hauled over a temporary bridge constructed of felled trees. Above the gorge the stream became very shallow. After great difficulty the source of the river was reached, consisting of four large lakes, of which the most important is in about north lat. 67°, west long. 153°. It is supposed to be about 520 miles from the mouth of the river.

Assistant engineer Samuel B. McLenegan, who accompanied Cantwell in his exploration of the Kowak in 1884, this year undertook a very difficult bit of exploration in a double bidarka or kayak, obtained at Unalashka. Owing to the difficulty of obtaining native assistance he was accompanied only by Seaman Nelson of the *Corwin*. They ascended the Noatak, also called the Nunatak or Inland River, which has been known for thirty years, but never explored. This river enters Hotham Inlet, westward from the Kowak, and about thirty miles north of the arctic circle. They entered the river July 2, and found almost from the first great difficulty in stemming the rapid current; at times they were compelled to track the canoe by a line from the bank, or wade in the shallows of the river-bed. Much of the region was mountainous. The river passed through numerous cañons, with sides rising high above the water, even reaching 1,000 feet in some places. The scenery was very grand. Indications of iron and copper ore were observed in many places. Two hundred and seventy-five miles, by the river, above its mouth, part of the provisions were cached, and the explorers lived on the country,