SCIENCE

FRIDAY, SEPTEMBER 2, 1887.

THE ADMIRABLE APPOINTMENT by the President of Mr. G. Brown Goode as Commissioner of Fish and Fisheries was announced this week. It meets at once the requirements of an exacting office and the exceptional provisions of the law creating it. Professor Goode was intimately acquainted with the methods of Commissioner Baird, whose scientific zeal and knowledge he shared, and his experience and attainments in practical fish culture and in the science of ichthyology make him easily first among those whose qualifications the President has been called upon to consider. But the fact that the President has been able to select from among the civil officers of the Government a known scientist, acquainted with the habits of food fishes, to serve in this important office without extra compensation, does not remove the absurdity of this special law. If Mr. Goode should die to-morrow there is absolutely no civil officer of the United States qualified, under the terms of the act, to take his place. The special law was passed when fish culture was in its infancy. Congress was willing to risk the experiment, provided it was intrusted to Professor Baird, and framed the law accordingly. The present provisions of the law have been outgrown. It is an absurdity to have a Fish Commissioner receiving not as Commissioner but as Assistant Secretary of the Smithsonian a salary of $300 a month, and appointing and controlling a Deputy Fish Commissioner at a salary of $416 a month. Nor is there any reason why the Fish Commissioner should not be paid a salary commensurate with the importance of his office, and be exempted from discharging the duties of two offices with the pay of one. These matters can be appropriately considered when the Senate is called upon to confirm the new Fish Commissioner.

IN WRITING of examinations a few weeks since, we mentioned the fact that we proposed to return to the same subject later. It gives us pleasure this week to present to our readers the views of Gen. Thomas J. Morgan of the Rhode Island State Normal School, Prof. W. H. Payne of the University of Michigan, Supt. Thomas M. Balliet of Reading, Penn., and Dr. B. A. Hinsdale of Cleveland, on the function and conduct of examinations. Too many of those who are engaged in the profession of teaching look upon the periodically recurring examination as supernaturally ordained, and therefore not to be altered or questioned. For such persons, and for their pupils, an examination is a dreary routine to be dreaded. It is to be looked forward to for months, and 'crammed' for with assiduity and perseverance. It is this aspect of examinations which is specially to be criticised and combated. The proper place and scope of examinations in any educational system must be determined and understood. They must work in harmony with enlightened instruction, and not project a foreign and inharmonious element into it. We trust that the present symposium will exercise a good influence toward this end.

THE QUESTION OF A SYSTEM of improved public roads is one so closely related to every material interest of the State as to place it properly among the most important questions of public economy. The science of road making and maintaining, though neither difficult nor abstruse, is nevertheless based on principles so well established and so unvarying in their operation, as to render their thorough comprehension an essential to success in securing and maintaining public roads, at once efficient and economical, whatever the administrative system under which they are constructed. In other countries the superintendence of public highways is recognized as an important and responsible duty, and is usually assigned to specially-trained, expert government engineers, while in the United States, where the greater mileage makes the economy, if not the efficiency, of roads even more important than abroad, the States depend for this responsible service on private citizens locally and temporarily appointed to the duty, without having provided for them the technical instruction and training so essential to success under any system. In view of this state of affairs we take pleasure in recording a move on the part of the Engineering Department of Vanderbilt University, which, under due restrictions, provides for the proper instruction, free of charge, of those who may wish to know enough engineering to make them the better road-builders.

ORIGINAL RESEARCH IN THE AMERICAN COLLEGE.

OUR American colleges, with the exception of a few of the larger institutions, are unfortunately not places of original research. It has hardly seemed to have entered into the American idea of education that a college, besides being a place of instruction, should be the place for the origin of new knowledge. Of late years, however, the influence of German universities, and of some of the larger colleges in this country, has been creating the conviction that original research in some form is necessary for the life of our higher educational institutions. There are thus numerous indications that the future is to see our colleges more the home of new learning than they have been in the past. But while we are beginning to realize how greatly it is for the interest of our colleges that research should be carried on within their walls, the prospects are, that, until a complete change takes place in our system, such research will be confined to the instructors and graduates, and will not be shared in by the undergraduate student. With a few exceptional cases we find the attention of the undergraduate confined to routine work, and it is only after graduation that he is allowed to specialize so far as to take up original investigation. Now, while this is due partly to lack of facilities and opportunities, partly to lack of requisite knowledge on the part of the instructor to direct such work, partly to the difficulty of selecting work which a young student can do, and partly to the universal disinclination to make new moves, it is at the same time largely due to a more worthy reason than any of these. There are many instructors in our colleges, who have every facility for such work, who think it not wise to encourage it, even though it would make the personal work of teaching a much more congenial one. It lies outside the scope of our college course. While, then, we may hope to see a time in the not distant future when our colleges shall be places of research, it is very doubtful whether this research will ever be shared in by the undergraduate, except in isolated cases.

The reason for this lies in the peculiarly American idea of the scope of and necessity for what we call a liberal education, and not in any failure to recognize the value of research. The value of research as a means of education in stimulating the student is fully appreciated. It tends to counteract many evil tendencies of our college-work. Routine courses in science as ordinarily pursued are apt to become monotonous and tedious to the student, soon degenerating into mechanical work. With the experiments detailed for him in his text-book or laboratory directions, their results cease to interest him, and a careless habit is almost sure to be fostered. His thought is hardly stimulated at all, but is rather curbed by the feeling that he is going over a path which hundreds have followed before, and that consequently his discovering any thing new is an impossibility. It is indeed surprising to see what little thought is required, on the part of the student, to go through some of our routine science courses. He learns the text-book, mechanically