

Letters to the Editor.

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Organisation of Scientific Work.

THE relations between scientific inquiry and constituted authority, whether ecclesiastical or civil, have seldom been cordial or wholesome. Science was once a fearful dragon, to be destroyed or confined. With the discovery that the beast had powers from which profit could be made by cunning masters, it was found more expedient to tempt him into harness. Our former state was probably the better, or at least the safer, and most of us will agree with Prof. Soddy that the scheme devised by the Indian Industrial Commission is simply an offer of servitude undisguised. While there is time, those with whom the decision rests should be told very plainly that the adoption of such rules of service as those quoted in the leading article in NATURE of February 19 must mean the alienation of all sincere and genuine investigators.

Research, like art, literature, and all the higher products of human thought, grows only in an atmosphere of freedom. The progress of knowledge follows no prescribed lines, and by attempting such prescription the head of a Service would merely kill the spontaneity and enterprise of his workers. No one fit to be entrusted with research worthy the name would undertake it knowing that his results might be burked or withheld from publication at the whim of his superior in the Service. Such conditions may be appropriate to certain forms of technical or industrial invention, where the sole purpose is to get ahead of a trade rival, but we can scarcely imagine that the vast and manifold undertakings promoted by the scientific services of the Indian Government are to be conducted in that spirit.

W. BATESON.

The Manor House, Merton, S.W.19.

I HOPE you will allow me to express through the medium of NATURE my concern at the proposal referred to in the leading article in the issue of February 19 to centralise in an Imperial Department the various scientific services in India—a policy which I believe to be likely to prove detrimental to good work. I was a member of the Indian Forest Department during the years 1871-99, so that my Indian experience is not very recent, but I have kept myself informed of what was going on. Since I left India research institutes have been established in different provinces with officers attached to them required to devote themselves to the study of scientific questions. In my opinion, it is of the utmost importance that these officers should have as free a hand as possible, and be allowed to work in their own way on the subjects which they know themselves most competent to study. If they are called upon to work under a centralised Department, and perhaps to turn from branches of study which they thoroughly understand to others in which they may have to begin by reading up, much of their time will be wasted and the results poor.

A centralised Department, to most people of Indian experience, means many reports and returns and constant correspondence, and I believe the result of such an innovation will be that some hours at the beginning of each day will have to be spent on what may be called "clerical duties." If a scientific worker is to do his best, he must be able to spend

all his time on his researches, and not be obliged to waste much of the day on clerical duties, only beginning his real work when tired and unable to do his best.

Centralisation will also mean, in my opinion, the spending of much money in keeping up clerical staffs, which, as most Indian officers will admit, have a wonderful tendency to increase. It will be much better that the recommendations of the last paragraph but one of your leading article should be followed and the money spent in giving financial assistance to the universities and research institutes instead. The paragraph to which I refer puts the arguments for the continuance of the present system and its better development excellently in a few words, and I trust it may have the effect on the administrative authorities that I feel sure it must have had on the scientific men who have read it.

J. S. GAMBLE.

Highfield, East Liss, Hants, February 25.

I HAVE not yet had time to study the Report of the Indian Industrial Commission, and may, therefore, be ignorant of some of the arguments for centralisation, but I am certainly in general agreement with the views expressed in the leading article in NATURE of February 19, and by Prof. Soddy and Dr. Rendle in the issue for February 26, regarding the dangers of that method of research organisation. Investigations under centralised bureaucratic control must almost always be concerned solely with questions capable of receiving easy and immediate replies, for the obvious reason that directors and committees can rarely be persuaded to authorise attacks upon difficult or distant objectives, regarding which, perhaps, no replies at all may be forthcoming. Now the most important discoveries have generally been made precisely by such attacks, and investigation is a lottery in which the greatest prize often falls to him who takes the greatest risks. Directors and committees do not like risks, and, consequently, seldom make discoveries. I should like to know, for instance, how any "Indian Scientific Service" would have attacked the malaria problem, which I commenced to assault (in a very foolhardy manner!) in 1890. I am sure it would have refused to authorise my attempts, and even to publish my first results. On the other hand, it would have wasted, with ripe bureaucratic prudence, thousands of pounds in looking for Plasmodia in marshes, or in trying to correlate various species of mosquitoes with local outbreaks of the disease, and I am sure it would have achieved nothing at all up to the present day.

We forget that, like really valuable art and invention, scientific discovery is almost always due mainly to the individual. One might as well try to organise an Institute for the Writing of Poetry as institutions for making great discoveries or inventions. Like art, discovery is creative. It depends much more on the brain than on the hand, even in work requiring the most careful manipulative skill. Scientific services will not be able to pick up "discoverers" on every bush. All they can do is to organise hand-work, for which they may be useful. But if the Government of India wishes to obtain great results for its expenditure it must buy genius. Now genius may be defined as the quality which achieves success, and the only way to buy it is to reward success—as suggested by the Committee on Awards in NATURE of January 8. What we all fear is that the Government of India will be tempted to spend much larger sums of money in buying, not genius, but its opposite.

At the same time certain researches, even of a petty kind, will require subsidies, and the Government