THE ENDOWMENT OF RESEARCH

WE are authorised to publish the accompanying list of the sums to be paid by the Government, on the recommendation of the Royal Society, during the present year in aid of Scientific Research.

We might well leave the list to speak for itself, but it would be ungrateful not to point out that the Duke of Richmond and Lord Saydon have by their action, beyond all doubt, inaugurated a new era in the scientific activity of our country, and one which is sure to be fostered by corporate bodies and individuals now that the Government has set so noteworthy an example.

PERSONAL PAYMENTS.

Mr. J. A. Brun.—For Correction of the Errors in the published Observations of the Colonial Magnetic Observatories 150.

Dr. Jodle.—For Experimental Investigations into the Mechanical Equivalent of Heat 200.

Prof. Parker.—For Assistance in Researches on the Morphology of the Vertebrate Skeleton and the Relations of the Nervous to the Skeletal Structure, chiefly in the Head 300.

Rev. W. H. Dallinger.—For Microscopic Investigations of Monads, Bacteria, and other Low Forms of Life 100.

Rev. F. J. Blake.—For compiling and publishing a “Synopsis of the British Fossil Cephalopoda” 100.

Prof. A. H. Garrod.—For Aid in preparing for Publication an Exhaustive Treatise on the Anatomy of Birds 100.

Dr. Murie.—For completing and publishing three Memoirs: “Anatomy of the Kingfisher,” 40, with five plates; on “Extinct Sirenia,” 40, with six plates; “Osteology of the Birds of Paradise,” folio, three plates 150.

Mr. H. Woodward.—For Continuation of Work on the Fossil Crustacea, especially with reference to the Crino- bates and other Extinct Forms, and their Publication in the Volumes of the Palaeontographical Society 100.

Prof. Schorlemmer.—For Continuation of Researches into (1) the Normal Paraffins, (2) Suberone, (3) Aurin 200.

Prof. H. E. Armstrong.—For Continuation of Researches into the Phenol Series, and into the Effect of Nitric Acid on Metals 300.

Prof. King and Rowney.—For Researches to Determine the Structural, Chemical, and Mineralogical Characters of a Certain Group of Crystalline Rocks represented by Ophiolite 60.

Mr. W. J. Harrison.—Towards the Expense of Collecting and describing Specimens of the Rocks of Charnwood Forest 50.

NON-PERSONAL PAYMENTS.

In aid of Apparatus, Materials, and Assistance.

Dr. J. Kerr.—For aid in Electro-Optic and Magneto-Optic Researches 200.

Mr. J. E. H. Gordon.—For Experimental Measurements of the Specific Inductive Capacity of Dyelectrics 50.

Prof. Guthrie.—For Apparatus and Assistance in (1) the Determination of the Latent Heats of the Crystallines and the Vapour Tensions of Colloids; and (2) the Examination of Heat Spectra and Radiant Heat by means of varying Electrical Resistance in Thin Wires 150.

Mr. J. T. Bottomley.—To aid in carrying out a Series of Experiments for determining the Conductivity for Heat of Various Liquids and Solutions of Salts 100.

Sir William Thomson.—For Assistance and Materials for a Continuation of Experiments on the Effects of Stress in Magnetism 1000.

Mr. W. Crookes.—For Assistance in continuing his Researches connected with “Repulsion resulting from Radiation” 300.

Messrs. Rückert and Thorpe.—For a Comparison of the Air and Mercurial Thermometers 50.

Mr. F. D. Brown.—For an Investigation of the Physical Properties, the Specific Gravity, Expansion by Heat, and Vapour Tension, of the Homologous and Isomeric Liquids of the CnHn+1 Series 100.

Mr. F. R. Roscoe.—For Continuation and Extension of the Experiments on the Self-registering Method of measuring the Chemical Action of Light 100.

Sir William Thomson.—For Investigation and Analysis of Tidal Observations and Periodic Changes of Sea Level 200.

Dr. J. B. Balch.—For the Expense of Illustrations for a Monograph of the Pandalusae 50.

Mr. H. T. Stainton.—For Aid in publishing the “Zoological Record” 100.

Prof. J. G. M’Kendrick.—For Apparatus for a Research into the Respiration of Fishes 75.

Prof. Gane.—For a more Complete Survey than has yet been made of the Physiological Action of the Chemical Elements and their more Simple Compounds, with the Objects, in the first instance, of establishing a Physiological Classification of the Elementary Bodies 50.

Dr. Brunton.—For Researches into the Physiological Action of the most important Compounds of Hydrogen, and into the Action of certain Poisons, and for Apparatus 100.

Mr. E. A. Schüfer.—To pay the Wages of an Assistant to give Mechanical Aid in Histological and Embryological Research 50.

Dr. Burdon Sanderson.—For an Investigation of the Normal Relation between the Activity of the Heat-producing Processes, and the Temperature of the Body 75.

Prof. Schorlemmer.—For Continuation of Researches into (1) the Normal Paraffins, (2) Suberone, (3) Aurin 100.

Mr. W. N. Hartley.—For Researches into the Photographic Spectra of Organic Substances, into the Phosphates of Cerium, the Conditions under which Liquid Carbonic Acid is found in Rocks and Minerals, the Double Salts of Cobalt and Nickel, and for other Investigations, and for Assistance 100.

Dr. Burghardt.—For a Research into the Origin of the Ores of Copper and (if possible) of Lead, their Mode of Formation, and the Chemical connection (if any) between the Ore and its Matrix 50.

Prof. Church.—For a Research into the colouring matters of Colein, of Red Beet, and for the Study of Plant Chemistry 50.

THE “CHALLENGER” COLLECTIONS

THE preliminary steps have been taken for the completion of the great work of the Challenger, and the vast collections made during the voyage are now being distributed among experienced workers for determination and description.

The director of the scientific staff has been at great pains in endeavouring to secure the services of men most competent for the task, and we are sorry to see that some of our English naturalists, and notably the president of the Geological Society, have thought it necessary to remonstrate against the course which the director has taken in the selection of the men to whom he is about to entrust the examination of the collections. We have already had occasion to refer to what we felt obliged to characterise as an unwarranted attack on Sir Wyville Thomson, and it is
with much regret that we observe an attitude of hostility to the mode of distribution which has been deemed most conducive to the reputation of the expedition and to the interests of science.

It would seem that while almost all the great zoological groups which the Challenger's dredges have brought to light have been handed over for examination to naturalists in this country, a few have been placed in the hands of American and German workers; and it is this association of foreign zoologists with the men to whom in this country by far the largest portion of the work has been assigned that has excited the indignation of the individuals referred to.

Now every one who has kept himself up to date with recent zoological research, must know that the foreign zoologists, to whom Sir C. Wyville Thomson has intrusted these collections, stand before all others in the amount and thoroughness of their work in the special departments of zoology for which their aid is asked, and the narrowest nationalism cannot deny that it was the duty of the director to see that the specimens were placed in the hands of men most competent to secure for science the results which have been obtained at the cost of so much labour, skill, and public expenditure.

If this country can be shown to enjoy the unique distinction of possessing in every department of zoological research men at least as good as can be met with elsewhere, the advocates of a national science may find an argument in favour of having the work absolutely confined to Englishmen; but if we cannot assume a position which no other nation in the world would think of claiming, it is plainly for the interests of science that we should supplement from abroad those departments of research in which foreign workers may excel us.

That the naturalists to whom we have referred will not receive much support from their fellow-workers will be evident from the subjoined letter to the Editors of the Annals now in process of signature, which has already received the assent of the presidents and secretaries of the Royal Linnean, and Zoological Societies, and of other leading men in this department of knowledge:

"Zooology of the 'Challenger' Expedition."

"As in a letter upon this subject in the number of the Annals of Natural History for May last, Dr. P. Martin Duncan, writing as president of the Geological Society, has stated that he speaks 'at the instance of a very considerable number of members of learned societies,' we, the undersigned, wish to state that we do not agree in the strictures passed by Dr. Duncan upon the manner in which Sir C. Wyville Thomson has distributed the specimens collected by the Challenger Expedition for description. So far as we have had an opportunity of judging we are perfectly satisfied that Sir C. Wyville Thomson, in the arrangements which he has made as regards these collections, has acted consistently with the best interest of science.

"It was, in our opinion, Sir C. Wyville Thomson's duty to secure the aid of the most competent naturalists without regard to their nationality; and, even if it were proper that national jealousies should be imported into science, Sir C. Wyville Thomson can hardly be reproached on this score, when it is considered that two-thirds at least of the naturalists whose aid he has obtained are Englishmen."


"It is of importance that no misunderstanding should exist as to the real state of the controversy which has arisen on a subject in which zoological science is so deeply interested, and we believe we cannot do better than lay before our readers the correspondence which has taken place between Sir Wyville Thomson and Dr. P. Martin Duncan before a word of hostile criticism had as yet shown itself in print."


"My Dear Sir Wyville Thomson,

"You can hardly imagine the strong feeling of disappointment which has arisen amongst a very large section of the naturalists and palentologists who study the invertebrates, in consequence of a letter which was published in the Ann. and Mag. of Nat. Hist. for March, 1877. In that letter the scientific world is informed by our mutual friend, A. Agassiz, that the Echin, Ophirans, Radiolaria, and a part of the Spongids collected in the expedition of the Challenger have been given to American and German naturalists for description, and that the United States have a 'fair share' of the work. So great is the feeling that English workers should have been thus passed over, that a conference has been held on the subject, and I have been asked to write to you in the friendliest spirit of remonstrance. I need hardly state that I should not have taken this liberty did I not happen to hold a position which entails action in everything relating to the progress of geological science. Writing just after the visit of many men whose capabilities as palentologists I am well aware of, I express their and my own opinion that in this distribution your amiability and want of personal acquisitiveness with English workers have led you astray. We recognise the great merits of those foreign gentlemen to whom you have sent collections and the exceeding liberality of A. Agassiz; but we do not think that you are justified in giving them the results of the greatest natural history expedition which has ever sailed from this country, unless there is a want of that power amongst English workers which will enable them to treat the subjects in the broadest sense, and to compare the recent and geological faunas satisfactorily.

"There is no such deficiency. I am asked to urge upon you a reconsideration of the matter, and to leave a fair portion of work in the hands of our friends, giving the rest to men of your own country. Assuring you that we appreciate your difficulties, and that we will assist you in every way consistent with the dignity of English science, I remain,

"Yours sincerely,

(Signed) "P. Martin Duncan"

"Sir C. Wyville Thomson."

"My Dear Dr. Martin Duncan,

"I must ask you to consider this note as written to you personally, for I cannot, of course, in any way recognise this nameless 'Conference.' I may mention, however, at starting, that in this matter I have consulted several of the first English naturalists, and that they entirely approve of my selection."

"I take up my pen rather hopefully, for your letter does not touch any of the considerations on which I have acted. My duty was to have prepared an official account of the voyage to the best of my power within a certain time. I endeavored to select to assist me in this (1) those who had most successfully made certain branches their special study and were generally regarded as authorities; and (2) those whom I knew by experience to be likely to do the work within the time to which I was tied down and to return the specimens in good order to be lodged in the British Museum. In all cases where I considered that these conditions were fairly fulfilled by Englishmen I at once and fully recognised the work as their own for the time of standing."

"I do not mean to go into special cases, but I give a general sketch of the arrangements as they now stand:"

San Mammals: Prof. Turner.

Birds: Dr. Salter.

Fish: Dr. Gürth, Dr. Boreas.

Cephalopoda: Prof. Huxley.


Lamellibranchiata: [ ]

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Cephalopoda .... J. P. Steenstrup ..... Copenhagen.
Brachiopoda .... W. H. Dall ..... Washington.
Coral .... L. F. Alden, Cambridge, U.S.
Ophirans .... T. Lyman ..... Cambridge, U.S.
Echinii .... A. Agassiz ..... Cambridge, U.S.

It will be thus seen that out of the twenty-two zoologists among whom the collections of the Challenger have been distributed seventeen are English; while out of the sixteen to whom the American collections have been assigned, four are American.

ELEMENTARY PHYSICS

Matter and Motion. By J. Clerk-Maxwell. (Society for Promoting Christian Knowledge. London, 1876.)

THE recent appearance of a swarm of elementary books on physics, some of which at least are written by well-known authors, leads to some very curious inquiries and speculations: for, though treating in the main of the same parts of the same subject as the works we are especially dealing with, and addressed professedly to the same class of readers, they have comparatively little in common with it. To a certain, even a considerable, extent, this difference is of course due to the idiosyncrasies of the authors; but, after all allowance is made for these, there is still a most notable divergence. It will be both interesting and profitable carefully to consider in what this divergence consists, and what is its probable origin. For it is not too much to say that an intelligent reader of Clerk-Maxwell's book, had he no other source of information, would be utterly unable to answer any one of hundreds of questions which might be framed (without "dodge" or "trap") by a qualified examiner, directly from the text of the others. It is true that such questions would be artificial rather than natural—bearing more upon old and cumbersome dogmatic fallacies than upon the actual facts of science. But if the reader of Clerk-Maxwell's book would be at a loss when examined from any of the others, the student who relies merely upon one (or even all) of these would hardly even understand the meaning of a question put directly from Clerk-Maxwell's. The main origin of this divergence is to be found in the steady progress of knowledge in all departments of true science; even the most elementary. And, bearing this in mind, we may give an almost complete statement of the case by saying that Clerk-Maxwell's book properly belongs to the second half of the present century, while his rivals give us that of the first half only. There give us again the elementary "Mechanics" of our student days (more than a quarter of a century ago) very little changed—though where changed, often changed for the better—the fact gives us what is emphatically the science of to-day. Possibly enough, in the beginning of the twentieth century even Clerk-Maxwell's book may appear a little antiquated; but it is hardly to be imagined that the text-book of that not very distant future will differ from Clerk-Maxwell's to anything like the extent to which that differs from its competitors. At least if there be anything like so great a difference it will depend upon some wholly new information as to the intimate nature of matter or energy, certainly not upon a mere difference in the mode of treatment.

The immense steps taken by Galileo and Newton (to mention only two of the chief workers) in the simplif-