surgical technique by Prof. C. H. Frazier, a full bibliography, and a splendid index.

One point remains for criticism. The work presented is a typical example of that association of animal experimentation with practical medicine and surgery which has made such definite headway in recent years, especially in America. It is perhaps beside the point that in this particular case the contribution made by the experimentalist is rather meagre of practical indications. There can, however, be little doubt that the practice of restricting experimentation to one species of animal, generally, as in the present instance, the dog, is a dangerous technique if it is proposed to apply the results in detail to man. The truth of the matter seems to be that while the end which different animals will attain is the same (*i.e.* they will so far as may be restore themselves to the normal state or somehow or other get round their difficulties), the means and detailed mechanism of restoration and compensation will likely vary widely in various species; they are, of course, relatively immaterial to the individual concerned. A. E. B.

OUR BOOKSHELF.

Proceedings of the Aristotelian Society. New Series. Vol. xvii. Pp. 497. (London: Williams and Norgate 1917.) Price 12s. 6d. net.

NOTWITHSTANDING the war, the Proceedings of the Aristotelian Society suffer no diminution in bulk. During the thirty-eighth session thirteen papers have been given, and two symposia have taken place. One of the latter, on the ethical principles of social reconstruction, deals directly with the war and some of its issues. In the other symposium the question is discussed whether the materials of sense—or “presented sensations,” as G. E. Moore prefers to phrase it—are affections of the mind.

The Dean of St. Paul's writes suggestively of some phases of the philosophy of Plotinus. M. Ginsberg gives a critical account of Malebranche's theory of knowledge. C. Lloyd Morgan, discussing fact and truth, and distinguishing facts of appearance from facts of knowledge, points out that the former are facts *for* knowledge. The static nature of truth-structure and of fact is repudiated. C. E. M. Joad deals with the onslaughts of the pragmatists and the new idealists on the theory of monism. Relations are real, external, and experienced. The fundamental objections to monism are logical. Bernard Bosanquet discusses the function of the State in furthering the unity of mankind, but it may be questioned whether a “communal” mind actually exists. A. N. Whitehead emphasises the idea that logic is the organising principle by which observation is elaborated into science. C. D. Broad criticises Hume's handling of miracle, and concludes that miracles might, but do not, happen. W. A. Pickard-Cambridge writes of the relation of value to our consciousness. The various subjective criteria offered us are inadequate or erroneous. We have innate, direct, unique knowledge of value. G. Dawes Hicks attacks the problem of realism. Matter and mind are disparate

entities. The *esse* of sensible objects is not merely *percipi*. There is no distinction between the mind and its states. The mind *is* its states. J. S. Mackenzie emphasises the dynamic value of the view that the universe is an intelligible whole. Miss L. S. Stebbing also contends that the conception of concrete unity is valid and stimulating.

H. Wildon Carr's presidential address inquires into the nature of recognition as a modified cognition, and also discusses racial or instinctive recognition. The volume is suggestive and stimulating, and we regret that space does not allow of more extended notice. W. L. S.

Aids to Rational Therapeutics with U.S.A. Pharmacopoeia Equivalents. By Dr. R. W. Leftwich. Pp. x+233. (London: Baillière, Tindall, and Cox, 1918.) Price 3s. 6d. net.

In many books on the treatment of disease the plan adopted is to discuss each disease and to indicate its treatment. This leads to much needless repetition, for in many instances the same general treatment may be applied to many different diseases. If, for example, we take the case of the infectious fevers, almost the same line of treatment may be adopted for all, with here and there a slight modification or addition. The author of this book has acted upon this principle: he divides diseases into some forty groups, discussing the general treatment applicable to each group, and then adding any special method indicated for any particular case. Thus, selecting at random, we have such groups as the catarrhal, the anæmic, the abscess, the malarial, the rheumatic, the cardiac, the vitamine insufficiency, etc. The grouping seems to have been particularly well done, and the information given in almost all cases is accurate and sufficient. Thus that rare disease, rat-bite fever, and its treatment with salvarsan are mentioned. Throughout, typical prescriptions are given, and, in addition, dietetic, electrical, and other forms of treatment are described as required. By adopting this plan the author has succeeded in compiling in a comparatively small space a complete system of treatment, and we believe that the book will be of considerable service to the young practitioner. In an appendix some useful hints are given on dealing with patients in private practice. R. T. H.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

The Profits of Research.

A NOTIFICATION issued by the Department of Scientific and Industrial Research, entitled “Notes on the Conditions under which Grants are made to Students-in-Training and to Individual Workers,” states that the Department, with the object of encouraging research into fundamental problems of pure science, is prepared to make grants to workers in educational institutions and elsewhere. I think the

condition imposed in paragraph (14), which I quote, deserves a wider publicity.

"(14) It should be noted that grants to research workers will be subject to the following conditions [among others] :—

"The results of the investigation as obtained from time to time shall, in the first place, be communicated to the Committee of Council, who, after consultation with the bodies and persons who have co-operated in the conduct and maintenance of the research, shall determine in the national interest whether, and if so to what extent and under what conditions, the results shall be made available.

"The Committee of Council reserve the right to determine, after consultation with the bodies and persons who have co-operated in the conduct and maintenance of the research, whether, and if so to what extent and in what proportions, the Committee of Council and those bodies and persons shall secure to themselves by patent, designs or otherwise, the ownership of the results of the research and any benefits and profits arising therefrom.

"It is not expected that results of direct technical value will often be obtained from research undertaken by a student in training, and the conditions stated above are not, therefore, attached to a grant to a student. But the professor and student will be asked, should results apparently of commercial value be produced, to consult the Department before taking any action to make the results public, or to communicate them to an industrial firm or other body for exploitation."

I sincerely trust that scientific investigators, whether professors or students, will read, mark, and inwardly digest paragraph (14), and think twice before they accept any grant from the Department of Scientific and Industrial Research. They have the right to know who is responsible for the imposition of this condition.

FREDERICK SODDY.

THE SUGAR INDUSTRY AFTER THE WAR.

UNDER the above title, Mr. T. H. P. Heriot, the lecturer on sugar manufacture at the Royal Technical College, Glasgow, has communicated a paper to the Royal Philosophical Society of Glasgow which has recently been published in its Proceedings. Since its appearance the subject has occupied the attention of the Royal Society of Arts, and the issue of the journal of the society for June 14 contains an interesting paper by Mr. George Martineau, which traverses much the same ground as that of Mr. Heriot and arrives independently at the same conclusions. The subject is so important at the present juncture, and our position with respect to it, in view of our prospective relations with our enemies, so serious, that no excuse is needed for referring to it. The general course of the development of the sugar industry is too well known to require any detailed description. Both authors deal with it in the introduction to their papers at just sufficient length to render the nature of their arguments and the conclusions to which they arrive intelligible and obvious to their readers.

Originally, all the sugar consumed in this country, and in Europe generally, was made from the sugar-cane, and most of it was imported from the West Indies. It was known, however, so far back as

the middle of the eighteenth century, that the particular kind of sugar—sucrose—with which we are now concerned existed in other plants than the sugar-cane. In 1747 the chemist Marggraf pointed out that it was present in the beetroot, then being cultivated on an extensive scale in Silesia as a forage crop, and his pupil, Achard, a Frenchman who had settled in Germany, grew the root on his estate, and set up a small manufactory for extracting sugar from it. The success of this enterprise induced King Frederick William of Prussia, in 1801, to supply funds for the creation of beetroot-sugar factories. The industry may be said, therefore, to take its rise from the beginning of the nineteenth century.

The Continental disturbances of that time, combined with our maritime supremacy and the effectiveness of our blockade, especially of the French ports, gave a great impetus to the development of beetroot-sugar manufacture. Napoleon, with characteristic sagacity, quickly saw in the beetroot a method of countering our blockade, at least so far as regarded the import of sugar. By his orders tens of thousands of acres of French soil were planted with beetroot, and schools of instruction in the art of cultivating it and in the methods of sugar-making were founded by his direction. Before Waterloo ended his career the beetroot-sugar industry of the Continent had been firmly established both in France and in Germany, and to that extent the future welfare of our West Indian possessions was, as Napoleon clearly foresaw, seriously jeopardised.

The creation of the beetroot-sugar industry was due entirely, in the first instance, to the exertions of men of science who had no practical acquaintance with the art of sugar manufacture. Its development has been largely owing to their labours. They have studied the mode of growth of the root and the conditions under which the sugar is secreted, and they have thereby succeeded in greatly increasing the sugar content. By careful and intelligent investigation they have enormously improved the methods of sugar extraction and subsequent treatment. They have brought chemical knowledge and skill to bear on the improvement of the analysis of saccharine materials and on the elucidation of many problems of a chemical nature connected with the industry. There is probably no branch of technology that could be named in which science has been more successfully applied than in the creation and development of the beetroot-sugar industry. On the other hand, science, in times past, had little to do with the sugar-cane industry, and so long as the West Indian planters could count upon the enormous profits that they formerly enjoyed, they had little or no inducement to think of science in connection with it.

But it would be untrue to allege that the planters of these latter days have been wholly oblivious to the bearing of science upon their industry. They could not be altogether unmindful of what it had done for their rivals, nor without hope that it might be serviceable in their own case, and, as a matter of fact, various attempts