cent. flour, 94.5 per cent. The loss of energy with the second bread was greater (5.5 per cent.) than with the first (3.9 per cent.). The intestinal secretions were considered to contribute largely to this. The feces with the 90 per cent. bread were more bulky, and the coarser particles of this bread produced a greater stimulation of the secretion of the intestine. The increase in the bulk of the evacuation is not an evil and in the case of many is even an advantage. As to the nitrogenous constituents, the average digestibility was 89.4 per cent. in bread made from flour extracted to 80 per cent., and 87.3 per cent. in that extracted to 90 per cent. In most of the cases there was a slight gain in body weight with both breads. Thus a *greater proportion of the energy of the grain*[3] *is available for human consumption when flour is milled at the 90 per cent. scale than on the 80 per cent. scale. The increase would extend the cereal supply of energy for the country for more than a month.* Against this is to be set the loss of protein in the offal as food for pigs. Another set of experiments were made with bread made from flour consisting four fifths of wheat extracted at 80 per cent., and one fifth of maize. At first the flavor of the maize was commented on, and there was in some cases disturbance of digestion, attended sometimes with diarrhea, and more often with constipation; but these symptoms passed off. The general conclusion is that bread made with the addition of maize flour was as digestible as bread made without it, and it was well digested by children. The addition of maize made practically no difference in the utilization of energy and nitrogen. Observations were made at a canteen on the dietetic effects[3] and *on the palatability of bread made from flour containing four fifths of wheat extracted* to 90 per cent., and one fifth of other permitted cereals (10 per cent. barley, made up to 20 per cent. with maize and rice, or rice alone). It was found *to be palatable* and *never to cause indigestion.*

These conclusions seem to strongly support my former statements that the "attack on the higher extraction flours is unmerited" and "that higher extraction flours are not normally harmful" and also when these flours are used more generally over the country "more grain will be released for the allied armies."

R. ADAMS DUTCHER

SCIENTIFIC ACTIVITY AND THE WAR

THE Italian mathematician G. Vivanti opened the preface of his book entitled "Equazioni Integrali Lineari," 1916, with the following words:

> While our sons fight valorously to liberate Europe from the Teutonic yoke it devolves on us, whose age and strength do not permit to offer arms to our country, to work for its scientific emancipation. A *national* science is an absurdity and he would be foolish who would refuse a scientific truth because it arose from beyond the Alps or the sea; but the work of scientific exposition and publication can be and ought to be national. Who does not recognize a German treatise by its minute and sometimes wearisome care of particulars, an English by its good-natured and discursive tone, a French by its form which is sometimes a little vague but always suggestive and elegant?

These words of an Italian scholar may be of especial interest at this time when so many of us are considering the question of how to render the most effective service to our country. It is interesting to note that Vivanti emphasized scientific exposition and publication as a means towards securing scientific emancipation. While scientific investigation should always occupy the foremost place in a permanent scientific program, it must be admitted that there is danger in fixing our attention too completely on the most important element in our scientific progress. Our students should not have to feel that the great majority of the best expository works relating to their subject are to be found only in the language of a people of low ideals imbued with a morbid desire to dominate the world at any cost.

From a quotation found on page 9 of the May, 1918, *Bulletin of the American Association of University Professors,* it appears that the German professors are still very active in the production of scholarly works, while those of England and France are devoting themselves much more completely to direct service connected with the war. This direct service is probably a natural concomitant of the high ideals which prevail in these countries, but it is evident that it points to the possibility "of winning the war in a military sense, only to find ourselves dominated by German knowledge and German science!"

The preparation of scholarly works of the

highest possible order at the present time is thus seen to be a patriotic service, which should be considered very seriously by those who are in position to render it. The uncertainty as regards prompt publication only adds to the credit due to those who are undertaking such service at the present time as far as opportunities connected with direct work for winning the war are not jeopardized thereby. It is perhaps reasonable to expect that scientific publications in the English language will find a wider market after the war than before, and that the public will then have acquired a higher appreciation of the nation's need of science.

It is perhaps especially important to emphasize the need of a vigorous development of pure science at this time in order that the applied sciences whose active development is being encouraged by immediate needs may not suffer later on account of a lack of theoretic impulses. The fact that applications do not always appear along expected lines was recently emphasized by H. Lebesgue in a review published in the *Bulletin des Sciences Mathématiques,* April, 1918, where he refers (page 94) to the fact that from the time elliptic functions were first discovered about a century and a half ago, mathematicians decided that they should have practical uses. Up to the present time the only applications of elliptic functions are the applications of mathematicians, who still await the first confirmation of their *a priori* idea as regards their practical usefulness.

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SCIENTIFIC BOOKS

Patenting and Promoting Inventions. By Moïs H. Avram, M.E., New York. Robert M. McBride & Co. 1918. Pp. 166. $1.25, postage extra.

By reason of the comprehensiveness, balance and candor of its brief discussions, this little volume seems to deserve clear differentiation from the familiar and misleading booklets designed merely to promote the soliciting business of firms advertised thereby. Beginning with its preliminary chapter (a general survey) entitled Why Inventors Fail, and throughout the seven successive chapters covering in outline the evolution of the patent system, the United States patent practise, the patenting of inventions abroad, patent attorneys, and expert investigations extending even into the very practical collateral questions of manufacture, markets and financing, there is however maintained a natural emphasis upon the need, shared by the inventor and the investor, for advice and assistance on the part of those technically qualified. In proportion as this need seems both real and permanent, in the complex industrial organization from which there seems no possibility of a return, such emphasis seems timely.

In his references to those who have to do with the work and administration of the Patent Office the author is not ungenerous. The uncertainties at present inherent in the development of inventions are neither exaggerated nor concealed. But not every reader may be able to share the author's apparent conviction that a timely resort to expert private advice would notwithstanding save the day for the inventor or the investor. Disregarding the fact that there are, of course, experts and "experts," it may be suggested, by way of supplement, that so long as there shall continue at the Patent Office a rapid flux in its inadequate and disheartened force, apparent defects in its organization and in its informative resources and an atmosphere of legal technicality, without due time or incentive for a broad consideration of scientific, economic or equitable considerations, there can be little hope for such service and security as the patent system was designed to afford. To the reviewer, it is accordingly a matter of gratification to find that the need for collective effort, involving some legislative action, is appreciated, even though it is not stressed in the work under review.

Although perhaps hardly pretending to the solidity of a work of reference, this volume seems sufficiently comprehensive and exact to justify the inclusion, in any subsequent edition, of such an index as would facilitate