cipitate was filtered off, dried and ground. The precipitate, dark green in color and with a grassy flavor, contained 58 per cent. protein on the dry basis, 6 per cent. ash and less than 1 per cent. of lignin and cellulose. It also contained 440 p.p.m. of crude carotene, but this amount decreased during laboratory storage. Based on a ton of dry grass the yield of this substance was about 285 pounds. The grass residue, yielding about 875 pounds per ton and still containing 44 per cent. of the original protein, appeared to be a fair quality stock feed.

Extraction of the protein concentrate with 95 per cent. alcohol removed about 20 per cent. of its dry weight but only 4 per cent. of its total nitrogen. This final product was dark in color and tasteless and contained over 72 per cent. protein on the dry basis. Its calculated yield per ton was 220 pounds.

It is suggested that either the crude or the extracted product could be made from surplus forage, or forage otherwise wasted, and if economically produced should be useful in supplementing present stocks of protein concentrates, particularly for poultry and hog rations.

J. T. SULLIVAN

U. S. REGIONAL PASTURE
RESEARCH LABORATORY,
STATE COLLEGE, PA.

WHY THE KILGORE BILL?

THERE are probably few leading men in science who would not, with minor qualifications, agree with the five major objectives set forth by Senator Kilgore in his article in SCIENCE of August 13, discussing "The Science Mobilization Bill." These may be abbreviated to read as follows:

(1) The need for a central independent agency of the Government devoted exclusively to the progress of expansion in Science and Technology.

(2) The need for integration of existing Government research and development facilities.

(3) The need for active Governmental support of fundamental research.

(4) The need for a uniform and effective policy to achieve the fullest utilization of scientific and technical manpower in wartime.

(5) The need to promote the use of Government patents in the interest of the public.

It is probably on the basis of such desirable objectives that Senator Kilgore, in his introductory paragraphs, ventures the rather broad statement "that the men of science favor the bill" (S. 702). From the discussions and comments that have come to my attention since the publication of my contribution to this discussion in SCIENCE of June 4, a large majority of the leading scientific men consulted have expressed strong opposition to the passing of S. 702. Unfortunately, a few have expressed violent opposition with words not always scientifically chosen. Unquestionably, however, all these men would find no contention over the objectives to be gained in the abbreviated statements quoted above. It is increasingly clear that a desirable objective is one thing and the method of obtaining such an objective is quite a different thing. It is not primarily a question of whether the ends justify the means but rather a question of whether the ends could be attained by the means proposed. This appears to be the basis and the only basis for a sound and intelligent discussion of the Mobilization of Science Bill.

No scientist can but be gratified as to the Senator's statement, "I have long realized the basic importance to the welfare of the country of a free science and an expanding technology." Perhaps Senator Kilgore over-compliments the scientist when he states that "Scientific and technical men hold in their heads and hands the collective knowledge of the ages." The free and copious publication in technical literature of the results of basic research in every conceivable branch of science shows the eagerness on the part of a scientific worker to give to the public the benefit of his findings and thus would appear to provide an adequate answer to the Senator's question, "Whose knowledge is it?"

It becomes obvious from a careful study of the Bill S. 702 that the proposed legislation would attempt to make impossible the repetition of certain unfortunate uses of technical knowledge by "vested" and "selfish interests." Such a problem is not specifically a problem of science and technology but a problem of society. As long as human nature is what it is, the scientific approach must take into consideration "selfish interests" as a specific entity in human behavior inherited through evolutionary processes as a means for the preservation of the individual and the species. The study of "selfish interests" presents a problem in social welfare that should be approached with the same order of scientific intelligence as one approaches the problems of instability in gravimetry or geomagnetism. Such can not be dismissed by legislation, nor does it appear certain that its dismissal would bring about an unmitigated Utopia in science.

No one proposes that rugged individualism should be fostered at the expense of public welfare. "Selfish interests" gaining the seat of authority have brought ruin to the Axis countries. It is, I think, the danger of the creating of an opportunity for "selfish interests" in high places that has caused the apprehension among those scientists who have expressed opposition to the Kilgore Bill. When we are willing to recognize that "selfish interests," however undesirable, is a potential entity that must be considered and accepted as a scientific fact, the question raised by the Mobilization of Science Bill resolves itself into the relative

dangers of distributed control as against centralized control, of cooperative arrangements against an attempted compulsion. It is because of the unlimited powers of the centralized control proposed in the Kilgore Bill, irrespective of the details of its sections, that so clearly defines the issue.

Reviewing the five objectives of the Senator's article in SCIENCE, there appears to be no valid reason why an already existing independent scientific agency of the Government, namely, the National Research Council, can not or could not bring about the objectives for which the Kilgore Bill was proposed. The Executive Order of President Wilson creating the National Research Council on May 11, 1918, so specifically directs. At the risk of repetition, and for the purposes of comparison with Senator Kilgore's five objectives, we quote:

The duties of which [the National Research Council] shall be as follows:

(1) In general, to stimulate research in the mathematical, physical and biological sciences, and in the application of these sciences to engineering, agriculture, medicine and other useful arts, with the object of increasing knowledge, of strengthening the national defense, and of contributing in other ways to the public welfare.

(2) To survey the larger possibilities of science, to formulate comprehensive projects of research and to develop effective means of utilizing the scientific and technical resources of the country for dealing with these projects.

(3) To promote cooperation in research, at home and abroad, in order to secure concentration of effort, minimize duplication and stimulate progress; but in all cooperative undertakings to give encouragement to individual initiative, as fundamentally important to the advancement of science.

(4) To serve as a means of bringing American and foreign investigators into active cooperation with the scientific and technical services of the War and Navy Departments and with those of the civil branches of the Government.

(5) To direct the attention of scientific and technical investigators to the present importance of military and industrial problems in connection with the war, and to aid in the solution of these problems by organizing specific researches.

(6) To gather and collate scientific and technical information, at home and abroad, in cooperation with governmental and other agencies, and to render such information available to duly accredited persons.

One can not review the history of the establishment of the National Research Council and escape the conclusion that the intent of such an agency was to accomplish the very purposes for which presumably the Kilgore Bill originated, but purposely avoiding the objectionable defects which are so flagrant to those who have opposed the proposed legislation in S. 702.

Until, therefore, the National Research Council is proved to be ineffective and void of any means of making itself so, the wisdom for further congressional acts for such a purpose will remain open to question. Were the Kilgore Bill to be passed as is, the only amendment that would appear to be consistent with such action would seem to require that with the passage of this act the National Research Council and possibly even the National Academy of Sciences should thereupon become dissolved. In times of such national emergency as confronted President Wilson and President Lincoln, one has difficulty in believing that it was the intent that these institutions were to be perpetuated primarily for honoring distinguished scholars with membership, however creditably such honor could be bestowed. In conclusion, why the Kilgore Bill?

HARLAN T. STETSON.

NEEDHAM, MASS.

SCIENTIFIC BOOKS

CYTOLOGY

Fundamentals of Cytology. By LESTER W. SHARP. 267 pages. 6 × 9. 176 illustrations. New York: McGraw-Hill Book Company, Inc. $3.00.

PROFESSOR SHARP, whose "Introduction to Cytology" received a deservedly warm welcome (there were three editions between 1921 and 1935), has in the present book essayed to bring the subject to the level of the college student who has only an elementary course in botany and zoology as a background. Sharp is exceptionally skilful in presenting and clarifying complex issues and if any one is equal to the task, it is he. That he has not been completely successful in his attempt is due to the fact that in the present state of confusion and clash of opinions some aspects of cytology can not possibly be given a portrayal that is both elementary and fair. The book comprises six chapters devoted to more general aspects and to the extranuclear elements of the cell, and eleven on the cytology of reproduction and genetics. This is a distribution that well reflects the status of our information concerning the cytoplasm and cytogenetics, respectively, especially if cellular physiology be not stressed.

In the chapters on the cytoplasmic components of the cell there is a great volume of information and, indeed, the treatment is often more like a condensation than a simplification. The instances where Sharp has attempted the latter, as in the case of chondriosomes