and clinicians interested in the deficiency diseases because of the excellence of the presentation of the clinical picture of pellagra and the photographs of the lesions. However, the reader must use discrimination in his acceptance of the personal opinions advanced by the author since they are at variance with the present generally accepted views.

W. H. SEBRELL

QUOTATIONS

REPORT OF THE PRESIDENT OF HARVARD UNIVERSITY

A SPECIFIC and challenging program for the adaptation of colleges to training for war needs and a vital discussion of the moral problem now facing men of student age are contained in the annual report of President Conant to the Board of Overseers—a report necessarily devoted largely to war-time problems.

Mr. Conant offers a practical outline for enlarged service on the part of American universities in war-time, and states that the question of whether a student should or should not volunteer is a personal decision in which the duty of the college is to give a maximum of information and a minimum of advice. Each individual must decide for himself, "for he will have to live with himself and face the consequences of the decision for the remainder of his days."

A PROGRAM FOR WARTIME

The requirements of the nation now take precedence over all other considerations, the president declares, and the immediate future of our universities depends upon the settlement of the relation of the university's educational work to the mobilization of young men for the fighting forces. For the satisfactory solution of this problem Mr. Conant proposes a threefold plan:

(1) An authoritative and comprehensive survey of the country's needs for trained men and women, including a survey of the present supply of skilled man power in non-defense industries.

(2) Additional thought to the possibility of more extended use of the colleges and universities for the training of officers.

(3) Consideration by the government of a modified system for selecting candidates for commissioned rank —a system which might include selection of potential officers after graduation from high school and a government-financed education combining both military training and college work.

A SURVEY OF MAN POWER

During the past year, Mr. Conant recalls, American colleges and universities have been helping to build up a reservoir of trained talent in different areas. Local draft boards have deferred the induction of advanced students of special subjects, but no quantitative estimate of supply and demand has been made. He declares:

> Now that there is just one object before the country, namely, the winning of the war as speedily as possible, such a quantitative appraisal not only becomes feasible from a practical point of view but vitally important. Unfortunately it is not possible to appraise the needs for university graduates in the post-war period. One can estimate the country's requirements for the prosecution of a war in terms of men as well as material. It would be possible, for example, to state how many air pilots or physicists will be needed. But no one can say how many architects or economists will be required in an America returned to peace. Without in any way minimizing the importance of informed leadership in the post-war world or the difficulties of winning the peace, we must recognize that a speedy victory is the prerequisite to any post-war world worth organizing. It is for war, therefore, and not for peace that we must now lay our immediate educational plans.

OFFICER TRAINING

Concerning the more extended use of the colleges for officer training, Mr. Conant cites the past value of the Army and Navy R.O.T.C. and the present service which these organizations are doing. One unfortunate aspect of the situation, he says, is the "unequal distribution of opportunities for officer training among the various colleges." If there is sufficient need under the expanded program of the armed forces, an increase in the size of the units might be desirable. At present, he says, there are at Harvard many more potential officers among the students than can be cared for by the R.O.T.C.

The president notes that two objections have been made to more extensive officer training in the colleges. The first is the fear of educators that it would result in dilution and militarization of the curriculum and, conversely (on the part of military men), that the training could be done better in independent camps devoted entirely to military subjects. The second objection—that the expansion of the R.O.T.C. would result in recruiting officers from one economic level—is more serious, the president maintains. Despite state- and city-supported institutions and the scholarship plans of the privately endowed colleges, the American college communities are recruited principally from the more prosperous third of the nation. Yet, he argues, even under Selective Service, will not the corps of officers be built from one economic group tending to place college men in the vast majority?

> If the country, then, really wishes to develop all possi-

bilities for recruiting its officers for the Army on a democratic basis, should it not direct its attention to the possibility of a new policy based on the selection of promising boys at the time of graduation from high school? . . . The potential officers should be selected on their qualifications for leadership and irrespective of the financial status of their parents. They could be inducted into some form of military organization as privates, and be sent at government expense to our colleges to be trained as officers in R.O.T.C. units. A general program in the first year of college would serve as the basis of a further selection; an intensified program in the following years of college could then be as short or as long as the Army might decide. Preferably, these men should not be under complete military supervision during their collegiate work, but rather on a special furlough arranged with sufficient pay to cover their expenses.

Almost all the youth of the country attend high school, but under normal circumstances less than one in ten goes to college, Mr. Conant says. From the point of view of democratic society and the future of the Army and Navy, this selective system of picking officers "would seem to justify the expenditure of funds required." For a long war it would guarantee a supply of the best officer material in each age group with some background of education beyond the secondary school level, and without regard to the accidents of parental fortune. The president adds:

> This last result would not constitute the least of the merits of such a plan. For if under the terrific pressure of a major military effort, we can preserve and extend the American tradition of equal opportunity—opportunity for all—we shall have taken a long stride toward demonstrating that we can fight this war without sacrifice of those ideals for which the issue has been joined.

THE UNDERGRADUATE'S PROBLEM

Reviewing the plans for a general speed-up of the university curriculum on a twelve-month basis (*Bulletin,* January 10), President Conant summarizes the relations between the average college undergraduate and the armed forces in war time. The university has accelerated its program to enable men in college to finish their academic work before joining the armed forces and at the same time has not relaxed the fundamental requirements for a degree.

With the lower limit of call under Selective Service set at twenty years of age, it is important, Mr. Conant emphasizes, that a way be open for younger men to join certain branches of the Army of their own free will. He cites Secretary Stimson's statement that men under twenty are needed because the combat services "must contain individuals possessing keenness, enthusiasm, daring, vigor and endurance." Says Mr. Conant:

> In this, as in preceding wars, it seems that able-bodied young men as yet untrained as specialists must largely determine their own futures. The decision is a difficult and trying one for a young man to make. But each individual must make it for himself, for he will have to live with himself and face the consequences of the decision for the remainder of his days. The question of whether or not he can be of greater service by volunteering for active duty or by taking another path can only be settled by each person for himself—settled on the basis of the best evidence he can command and in the light of his own convictions.
>
> Selective Service is, in general, a rational and fair way of building an army. We must recognize, however, that it has certain limitations and that these limitations place a heavy burden on our younger college students. . . . The duty of the college to all its students, as I see it, is to give them the maximum of information and the minimum of advice. Certainly no one would wish to lower the morale of a nation embarked on a critical struggle by dampening the fighting spirit of those who are eager to join the colors. The national government may at some later time prohibit students with certain talents from enlisting. In the meantime college faculties and administrative officers can hardly undertake to shoulder the responsibility of directing the future of those who wish to join the fighting forces.

FACULTY AND DEFENSE

Evidence of the "spirit that prevails" can be found in the unanimous vote of the faculty to place themselves at the disposal of the university for a twelve-month year without additional compensation, President Conant continues.

Already many men of the faculty have been engaged for a year and a half in an "ever-increasing load of defense work." These activities have included those professors who have devoted a portion of their time to government work in Washington or are on leave of absence for this purpose; staff members on leave of absence with the armed forces; research workers under government contract; and those taking part in educational programs connected with the defense effort.

In his article in the last *Bulletin* (January 10, 1942) Dean George H. Chase, '96, mentioned the serious loss of faculty personnel which the university is facing and cited figures showing how many Harvard teachers are giving full- or part-time to the cause of victory. Since last week these figures have been revised enough to be certain that more than 100 members of the faculty have now been granted leaves of absence for defense work (74 received leave in September, 1940, and 63 in September, 1941, although some of these leaves overlap). At least 142 members of the faculty are known to be engaged in part-time war work, and Mr. Chase declared that 286 are now engaged in defense work of some sort in addition to their teaching loads. This number is swelling daily. The *Bulletin* hopes to

print more definite information on the subject in the near future, when the university will have more complete records.

The whole story can obviously not be told because so much of the work is of a secret character. But, as Mr. Conant says in his annual report, "if the whole story could be told, it would demonstrate a record of national service among members of the university staff which would be a deep source of pride to all Harvard men." He writes:

> The first asset of a modern university is neither its invested capital nor its plant. The first asset is the faculty. In all our attempts to conserve dollars during the war emergency, therefore, we must be certain that we do not impair the quality of our staff. . . .
>
> During the war years and particularly when hostilities cease, we must bend every effort to strengthen each of our dozen faculties by the addition of the ablest teachers and the most distinguished scholars available. If we succeed in this endeavor we shall insure a brilliant future for this university, whatever fluctuations in our financial fortunes may occur. If we fail, it will be of little moment to the nation whether the figure representing Harvard's dollar assets has moved up or down.—*Harvard Alumni Bulletin.*

SPECIAL ARTICLES

A FACTOR IN DOMESTIC RABBIT PAPILLOMA TISSUE HYDROLYZING THE PAPILLOMA VIRUS PROTEIN[1]

THE virus of infectious papillomatosis[2] is seldom demonstrable[3] in domestic rabbit growths. On the other hand, growths occurring under natural conditions in cottontail rabbits usually yield highly infectious extracts.[2] Further, the virus can be obtained as a homogeneous protein from growths in cottontail rabbits but not from growths in domestic rabbits.[4] The chief reason for suspecting virus in most domestic rabbit warts is the presence of a specific antigen which immunizes[5] other rabbits against infection with the virus. Even in this respect, there is evidence that virus as such is not present in suspensions of the growths, for the antigen is retained by Berkefeld filters, through which the virus readily passes, and is sedimented in ultracentrifugal fields which do not affect the virus. An explanation for the absence of virus and an insight into the probable nature of the antigen of domestic rabbit warts is suggested in the results of the experiments described here.

There is evidence that the papilloma virus is a macromolecular nucleoprotein.[6,7,8] The protein, introduced into susceptible hosts, gains entrance into epidermal cells and there progressively increases in quantity in cottontail and, presumably, also in domestic rabbits. It is conceivable that in these cells there exist not only factors which participate in the synthesis of the virus protein but others which may degrade it. In domestic rabbits the activity of the degrading factors may keep pace with that of factors influencing synthesis. The present work demonstrates a factor, presumably an enzyme, in domestic rabbit wart tissue which hydrolyzes the papilloma virus protein.

TABLE 1

THE EFFECT OF DOMESTIC RABBIT PAPILLOMA TISSUE ON THE PAPILLOMA VIRUS PROTEIN AS MEASURED BY FORMOL TITRATION. THE AMINO NITROGEN WAS DETERMINED BY THE VAN SLYKE METHOD ON THE TRICHLORACETIC ACID FILTRATE

		cc 0.01 N NaOH		
	Time (hours)	Papilloma tissue + virus protein	Papilloma tissue	Virus protein
	0	2.0	2.0	0.43
	3.3	2.4	1.8	0.43
	21.5	3.6	2.4	0.43
	30.5	4.5	3.2	0.78
Total virus protein N	0	0.3 mg		0.3
Amino N found (Van Slyke)	30.5	0.16 mg*		0
Amino N equivalent (from formol titration)		0.13 mg		
Percentage of total N as Amino N (Van Slyke)		53		0

* In excess of the amount present in the filtrate of papilloma tissue alone.

Table 1 shows a typical experiment with papilloma tissue from the domestic rabbit. The rabbit was inoculated broadcast with the virus protein in scarified areas on the abdomen and sides. The resulting confluent growths were sliced off when 1–2 mm high, washed free of blood in 0.9 per cent. sodium chloride solution, and ground with sand in 0.05 M phosphate buffer pH 6.5. The tissue suspension was decanted, diluted and 1.0 cc was added to each of 2 tubes. To one tube 1.0 cc of solution containing 2.0 mg of virus protein was added and to the second 1.0 cc of water. In a third tube 1.0 cc of buffer was added to 1.0 cc of

[1] This work was aided by the Dorothy Beard Research Fund and by a grant from Lederle Laboratories, Inc., Pearl River, N. Y.

[2] R. E. Shope, *Jour. Exp. Med.*, 58: 607, 1933.

[3] R. E. Shope, *Proc. Soc. Exp. Biol. and Med.*, 32: 830, 1935.

[4] J. W. Beard, W. R. Bryan and R. W. G. Wyckoff, *Jour. Infect. Dis.*, 65: 43, 1939.

[5] R. E. Shope, *Jour. Exp. Med.*, 65: 219, 1937.

[6] D. G. Sharp, A. R. Taylor, D. Beard and J. W. Beard, *Jour. Biol. Chem.*, 142: 193, 1942.

[7] H. Neurath, G. R. Cooper, D. G. Sharp, A. R. Taylor, D. Beard and J. W. Beard, *Jour. Biol. Chem*, 140: 293, 1941.

[8] A. R. Taylor, D. Beard, D. G. Sharp and J. W. Beard, *Jour. Infect. Dis.* Submitted for publication.