

terms of the sum of the percentage of normal rainfall for each of the 3 summer months (June to August) when each receives less than 1.5 inches.

In addition maps are included showing the average dates of planting and harvesting important crops in Indiana and the temperature relation to these dates in its annual march.

In brief, the book is outstandingly complete in subject-matter and profusely illustrated, containing nearly 450 climatic maps for Indiana, in addition to many other forms of graphic presentations, the greatest number ever published for any State. Among the

some 80 tables of climatic data, detailed weather records for long periods of time are given for key Weather Bureau stations representing different areas of the State. Most of the maps could well have been in larger scale, but this, in view of their great number, would have increased greatly the size of the volume. However, if this had been possible, it would have been well worth while. Dr. Visser truly has presented a challenge to climatologists of other States as a guide for future studies and model for publications of like character.

J. B. KINCER

REPORTS

TECHNOLOGICAL MANPOWER

DR. CHARLES L. PARSONS, secretary of the American Chemical Society, has addressed the following letter to the President of the United States:

We appeal to you for aid to forestall disaster. England, Russia, Belgium, Canada, and even France, have already acted. Only the United States fails to realize that the elimination of technological brains—the “know how” of production, the source of progress, and the foundation of our success in the world’s future economy—can only lead to catastrophe.

The training of chemists, chemical engineers, physicists and other indispensable scientists has virtually ceased. At least 50 per cent. of our technological manpower is under thirty years of age. The younger scientists are already in the Army. Those ready for our colleges are not permitted to train to enable America to compete in the peace to come. England, Canada and Russia, per contra, are crowding their technological schools for this competition; some are even doubling their attendance.

They are allowing virtually none to leave production for their combat forces. Our own production is already decreasing and will become stagnant for lack of this type of man, one of whom can make jobs for many. They have been trained to use brains, not arms. The combat army would be strengthened by their discharge and efficient utilization. Modern progress and industrial competition are impossible without them. Research is their tool. Their output has made this nation strong and will assure its future if permitted to function.

American technology has given birth to the greatest power of all time. To-day we are drying up prosperity at its source. Public opinion of the future will view with amazement the waste of scientists in World War II, will applaud the unequalled accomplishments of the few who were utilized, and will condemn the lack of trained personnel in the economic competition that is to come. Our children and grandchildren will not forgive the loss of an entire generation of scientists—a disaster that can easily be avoided.

No more than 100,000 of the 10,000,000 in the combat services are involved in the problem. Comparatively, their

number is insignificant. Before induction they already have saved this war by enabling America to keep abreast, and often ahead, of the miraculous devices of our enemies. They have admirably demonstrated that “Science is Power.”

Mr. President, only you can avert a national tragedy. We ask that technological brains may still grace our colleges and save our production; that early discharge come to those in the services. We are prepared to prove our thesis before any unbiased jury you may appoint. We especially urge the early discharge of technological men.

Dr. Parsons also made public an appeal which he has sent to the 40,000 members of the American Chemical Society, urging them to use their influence individually to save America and American industry from disaster. From the inception of the Selective Service law every effort has been made by the society, working through administrative channels, to see that chemists and chemical engineers were utilized where they might serve America best—in the appropriate armed services, in the “production army” and in research essential thereto. The appeal reads:

With the exception of those individuals who through misguided patriotism felt that it was essential to be in uniform irrespective of the efficient utilization of their specific training and experience, the society’s efforts in cooperation with Selective Service until March, 1944, were highly successful.

The virtual blanket draft of men 18 to 26 years of age, later extended to 18 to 29 years of age, has entirely altered the picture so that America faces a future, which, when carefully surveyed, is little less than appalling. All efforts to obtain real relief through administrative procedure have failed. We regret, deeply regret, that there appears to be no way to save the situation except through public opinion and legislative relief.

The McDonough bill now has been introduced into Congress by Congressman McDonough, of Los Angeles, calling for legislative relief in the hope that America’s future during the present conflict and in the postwar world may be conserved. We are asking every member of the Amer-

ican Chemical Society, and industrial leaders who are especially interested in the outcome, to read and study carefully the data which the society has assembled on scientific and technological manpower, and having done so to express their views to their Congressmen and to their Senators in order that their representatives may have the reaction of those especially qualified to advise them in this

matter. They will read and study your letters especially if you are or are to become a veteran.

Your officials are doing everything in their power to remedy the situation. The public must be aroused. Without the aid of those who will suffer most from the loss of an entire generation of scientists, we are helpless. Please do your duty as you see it.

SPECIAL ARTICLES

GROWTH-RETARDING EFFECT OF CORN IN NICOTINIC ACID-LOW RATIONS AND ITS COUNTERACTION BY TRYPTOPHANE¹

IN a previous study,² it was shown that corn or corn grits exert a pronounced growth-retarding effect in rats on nicotinic acid-low rations and that this untoward effect can be completely counteracted by including 1 mg of nicotinic acid per 100 gm of ration. At the same time, it was reported that raising the level of casein modified the action of corn. This report is an elucidation of that observation.

The basal ration used had the following composition: Labco casein (3 times extracted with 95 per cent. ethanol) 15, sucrose 78, corn oil 3, salts IV³ 4 and cystine 0.15 parts. Vitamins were incorporated in the ration at the following levels: thiamine 0.2, riboflavin 0.3, pyridoxine 0.25, calcium pantothenate 2.0, choline chloride 100, inositol 10, 2-methyl-naphthoquinone 0.1 and biotin 0.01 mg per 100 gm respectively. Halibut liver oil (diluted 1:2 with corn oil) was fed at a level of 2 drops per week, with α -tocopherol included at 0.5 mg per drop. A norite eluate of solubilized liver extract, prepared so as to contain practically no nicotinic acid, was fed, where indicated, at a level equivalent to 11.5 μ g B₆ (*S. lactis* assay) per 100 gms of ration. These vitamin levels were maintained both in the basal and corn-supplemented rations and the nicotinic acid content of the basal ration was < 0.01 mg per 100 gm.

The low protein (L.P.) basal ration contained 15 per cent. casein and the high protein (H.P.) 20 per cent. casein. In all cases, corn was incorporated so as to replace 40 per cent. of the entire ration, which reduced the casein levels of the L.P. and H.P. rations to 9 and 12 per cent. respectively. Whole yellow corn

meal and corn grits at a level of 40 per cent. added 3.4 and 3.6 per cent. of crude protein ($N \times 6.25$), respectively. Weanling male rats were used throughout and in all cases at least 3 animals were used per group. The growth results obtained on the two rations are shown in Table 1 and demonstrate that casein has a marked protective action.

Since the protective action of casein could not be explained on the basis of its nicotinic acid content, other possible factors were considered. Inasmuch as corn is deficient in the essential amino acids lysine and tryptophane, it seemed logical that the additional casein might be contributing these amino acids in

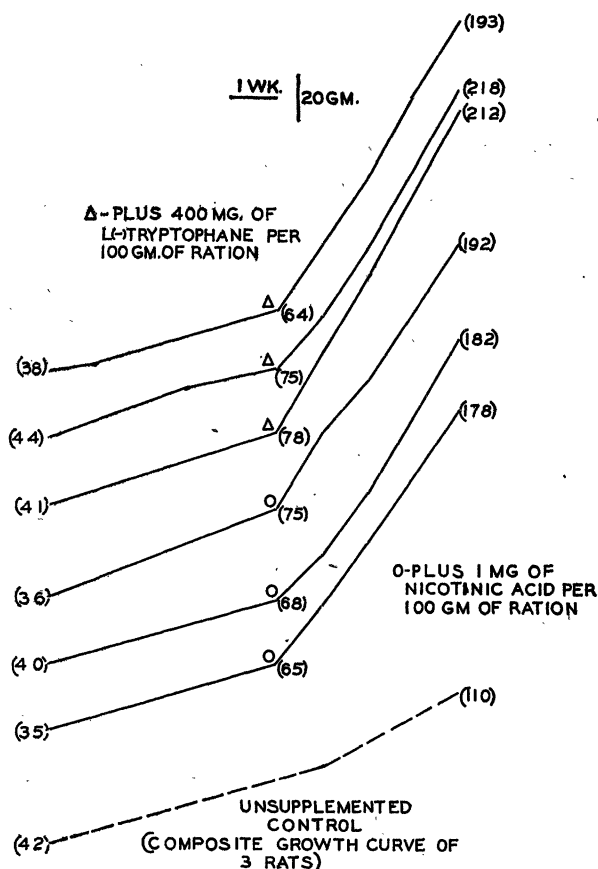


FIG. 1. Growth responses resulting from the addition of 1(-)tryptophane or nicotinic acid to the low casein plus corn grits diet and the growth curve of the unsupplemented control. (Figures in parentheses represent rat weights).

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² W. A. Krehl, L. J. Teply and C. A. Elvehjem, *SCIENCE*, 101: 283, 1945.

³ P. H. Phillips and E. B. Hart, *Jour. Biol. Chem.*, 109: 657, 1935.