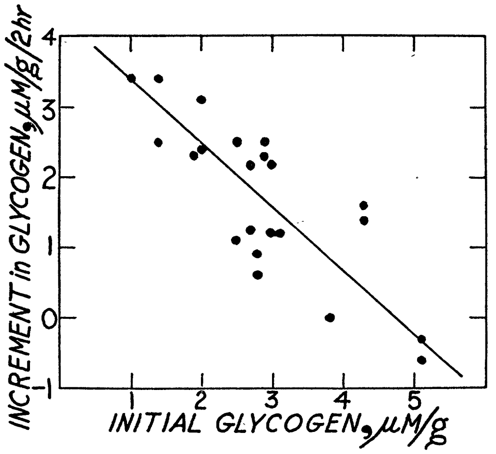

FIG. 1. Relationship of glycogen synthesis to initial glycogen content in rat kidney slices.

high glycogen content, but the physiological significance of this is not evident. The present experiments show that kidney slices are capable of synthesizing glycogen from glucose *in vitro.*

Approximately 10 slices, 0.5 mm thick, were obtained from each kidney of 150–200 g male albino rats. The slices were placed on filter paper moistened with buffer in a Petri dish set in a tray of ice. Three to five slices, chosen at random, were weighed on a torsion balance and placed in Warburg vessels containing 2.0 ml of medium and 0.2 ml of 5.4% glucose. The vessels were gassed for 3 min with a 95% O_2–5% CO_2 gas mixture and incubated for 2 hr at 37°. At the end of the incubation period, the entire contents of the vessel were transferred to a centrifuge tube and 1 ml of 80% NaOH added. Glycogen was determined by a modification (*3*) of the method of Good, Kramer, and Somogyi (*4*), using the method of Nelson (*5*) for the final determination of glucose equivalents.

In 23 experiments, the mean initial glycogen content was 2.4 ± 0.21 µM (as glucose) per g wet weight. The increment in glycogen after incubation for 2 hr was 1.6 ± 0.44 µM/g, demonstrating effective glycogen synthesis by kidney tissue. It was found that the synthesis of glycogen was inversely related to the initial glycogen content (Fig. 1). The coefficient of correlation for this relationship was 0.82 ± 0.071. The significance of this correlation remains to be determined.

Optimal synthesis of glycogen was achieved with a medium of the following ionic composition, expressed in mM/l: K^+, 110; Mg^{++}, 20 (or Ca^{++}, 10); HCO_3^-, 40; CL^-, 110; pH = 7.35. Sodium or phosphate ions were inhibitory. Except for the lack of a sharp pH optimum, these *in vitro* conditions are virtually identical with those found by Buchanan, Hastings, and Nesbett (*6*) for rat liver slices, and contrast sharply with the optimal conditions for glycogen synthesis in muscle (*7, 8*). Further studies of the relationship of inorganic ions to carbohydrate metabolism in kidney tissue should be especially interesting in view of the recent work of Whittam and Davies (*9*) which indicates that metabolic energy is necessary for the maintenance of Na^+ and K^+ gradients in kidney slices.

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Comments and Communications

Hope Chest

MAY I propose that a "crackpot pot" be established by foundations and other agencies that grant funds for research?

This could help compensate for such organizations' too common regression toward traditional means in their criteria of research competence and promise. The intimate communication that exists among the various fund-granting groups, amounting at times essentially to interlocking of directorates, inevitably means that special points of view become accepted as orthodox by the makers of grants. In addition, if an individual comes from certain institutions, if he holds certain degrees, if he has certain types of backgrounds, or if he uses certain methodology, he is among the blessed. When he asks he is likely to receive.

The history of science teems with episodes of outstanding discoveries of science accomplished by nontraditional methods and by *personae non gratae.* Crackpot pots could aid such individuals in this and future generations to get financial support for their creative heterodoxy.

Such pots of gold would consist possibly of no more than one-tenth of the total sum of money to be dispersed by an agency. Unlike the other funds, usually expended on the basis of the majority recommendations or votes of committees, officers, or trustees, these sums could be spent only on recommendation of a minority. And at least one member of the group would have to believe firmly in the project he wanted to have supported. If he could not get the others to agree with him, he could then use his proportional share of the total crackpot pot to support the project. The researcher, of course, would never learn from which funds his support came.

After a period of a decade, agencies using this method might review its results to see whether the plan had been a total loss or whether there had been some brilliant and significant exceptions. A friend of mine, a professor in a major university, told me of sitting on a fund-granting committee that had a few thousand dollars left over after they had made all the grants that they could agree on for the year. At his request, part of the remaining sum was given to an unknown young woman at an institution of no renown for research. This woman seemed to have a good idea but her qualifications were highly doubtful. At the end of three years her investigations were completed, and there was unanimous agreement that her work had been outstanding—superior to any of the others supported. Such an event might be repeated many times over if the crackpot pot were institutionalized.

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Identification of the Auxin Present in Apple Endosperm[1]

A RECENT paper by Luckwill (*1*) provides evidence for the rather wide distribution of a natural plant growth substance that is not identical with indoleacetic acid (IA). This unknown auxin has been characterized by paper chromatography and has an Rf value of 0.83 as compared to 0.35 for IA (*1*). Luckwill reports that apple endosperm is a particularly rich source of this unidentified growth substance. Identification of the fruit setting factor of corn endosperm as the ethyl ester of indoleacetic acid (EtIA) (*2*), suggested the possibility that the substance isolated from apple endosperm might also be EtIA.

An ether extract of endosperm tissue from 55-day-old apple seeds was prepared according to the methods employed by Luckwill (*1*). Paper chromatograms were run using Whatman No. 1 strips and *n*-butyl alcohol saturated with 3% ammonium hydroxide as the solvent. Standard solutions of IA and EtIA were prepared in ethyl ether at a concentration of 10 mg/ml. After removal of the papers and drying, the spots were developed using the ferric chloride-sulfuric acid reagent of Tang and Bonner (*3*). Preliminary observations had indicated that EtIA as well as IA gave a bright reddish-violet color on filter paper when this reagent was applied. All three chromatograms gave spots of the same color and approximately the same intensity. The following Rf values were obtained. First trial (total solvent migration 12 cm): IA, 0.35; EtIA, 0.82; and endosperm extract, 0.81. Second trial (total solvent migration 20 cm): IA, 0.35; EtIA, 0.84; and endosperm extract, 0.83. The fact that only the one spot was found with the endosperm extract would seem to preclude the presence of indoleacetic acid. The agreement of the Rf values that were obtained in this study with those found by Luckwill is very good. This strongly suggests that the native auxin of apple endosperm is the ethyl ester of indoleacetic acid, and that this substance may be of rather widespread occurrence in other plants.

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True Scientists

IT is likely that discussion of Dr. Hammett's letter (SCIENCE, 117, 64 [1953]) on true scientists may go on for a long time, or at least as long as editorial patience will permit, if for no other reason than that true is a relative term, but true science is an umbrella under which all scientists would like to be covered.

There is however one point raised by Dr. Kahn (SCIENCE, 117, 697) in his comment on Dr. Hammett's letter with which I wish to take issue. Dr. Kahn suggests that the conception of a scientist as a "man who sits in an ivory tower" is not only untrue but "prejudicial to the interests of science, since in these days to be different is to be suspect." Is a scientist today who dares to be different doing something thereby which is prejudicial to the interests of science?

Is it not of supreme importance to be different when circumstances seem to demand it, whether it is suspect or not? Is not the very fact that all too many scientists do, in effect, sit in an ivory tower, devoting their energies and even their reading almost exclusively to their teaching and research, that has led to demands by some that there be even a moratorium on scientific investigation for a time, until enough is known of motivation and control of human behavior to make safe use of scientific discovery?

Whatever else the true scientist may be, he must be a dedicated person—dedicated not simply to his field of study but to human welfare in its broadest sense. He cannot afford to detach himself from concerns of economics, government, politics, or any other of the many human activities without which democracy cannot long function. If he does so, it will be at his own peril and ultimately that of science itself. For real science can only progress in an atmosphere of freedom, and freedom will last only as long as intellectual leaders, of whom scientists make a large proportion, dare to be nonconformists when the prevail-