ing embryonic organ so that the effects of experimental environmental conditions may be studied. The medium is prepared in the following way, under sterile conditions: 5/9 ml (10 drops from a volumetric pipette) of yolk from the 72-hr incubated egg is added to 24 ml of Tyrode's solution. No further sterilization is done before using this as a culture medium.

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Comments and Communications

Sponsored Research

THE issue of January 18 contained an exchange of letters between F. A. Middlebush, president of the Association of American Universities, and Oliver Buckley, chairman of the U. S. Science Advisory Committee, concerning basic personnel policy to be adopted both by government and universities in respect to emergency research contracts.

Although I find myself in substantial agreement with all the aims outlined by Dr. Middlebush and with many of his recommendations, I cannot help but feel that he has ignored a very important aspect of the more general problem of sponsored research programs and faculty compensation. In particular, when he says that ". . . universities . . . avoid policies which make educational and basic research activities poor relations of sponsored research," I feel he is ignoring the well-known fact that, through lack of adequate funds, most universities are today placed in the unfortunate position of not being able to avoid adopting policies that make educational and basic research activities poor relations, not only to sponsored research but also to government and industrial research quite generally. Most universities are not paying adequately for faculty services nor, in the main, are they sufficiently endowed to do so.

Since there is no absolute yardstick for measuring what is an adequate salary, adequacy can only be gauged by such results as (1) the attractiveness of faculty positions to younger, qualified people planning careers, and (2) the competition offered by other employment to faculty members. Without being able to quote figures, it is my personal observation that most universities are coming off second best on both these scores, and that the present situation, if allowed to continue, will eventually result either in low faculty morale or, over a long period of time, a real shortage of topflight talent in the academic field.

Although I am not able to suggest any remedy for this situation, I do not feel that arbitrarily restricting the temporary recourse offered by higher remuneration from emergency contracts will have any result other than to increase the discontent among those so restricted and further encourage the flight from university positions. I believe, on the contrary, that if sponsored research, emergency or otherwise, can be used to increase faculty salaries through this rather trying period of inflation, and so keep good men at academic posts, then this temporary remedy should be welcomed, at least pending the end of the period or the discovery of some longer-range solution. I do not believe that such an expedient, properly administered, should result in any real disruption of our universities—certainly no more so than is already extant in the nature of the present emergency and the present existence of emergency research.

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Aerosol for Controlling Herbarium Pests

ONE of the serious problems in a herbarium is the protection of specimens from damage by insects. Experience at the U. S. National Arboretum reveals two pests: cockroaches and cigarette beetles. The usual methods of control employ bichloride of mercury, carbon bisulfide, hydrocyanic acid gas, paradichlorbenzene, or naphthalene. An innovation proposed by Hugh O'Neill (*Rhodora,* **40,** 2, [1938]) advocated baking the specimens to eliminate infestation.

Since all these techniques have various shortcomings, experiments were undertaken to find a better solution of the problem. Preliminary tests with ordinary household aerosol bombs indicated satisfactory control, but the containers were too small, as well as too expensive, for a large herbarium. Furthermore, it was thought that the petroleum base of the usual formula might eventually result in discoloration of the herbarium sheets. After consultation with R. A. Fulton and F. F. Smith, of the Bureau of Entomology and Plant Quarantine, USDA, a large, refillable bomb and a special, nonoily formula, with the following ingredients was recommended:

	Grams
Pyrethrum extract	40
Cyclohexanone	60
DDT	100
Freon	1800

Although one application is considered to be effective for a year, the treatment is given semiannually. Four hours are required for 250 herbarium cases, most of the time being consumed in opening and closing the doors. On the basis of cost, not only of materials but also of operators' time, the aerosol is unquestionably cheaper than any of the other methods. In comparison with the bichloride of mercury technique, formerly used at the National Arboretum, the

savings are estimated to be $3000 a year. A further advantage is in the elimination of the concomitant health hazard.

Conceivably, this aerosol control of pests might have application for the protection of other kinds of museum collections, especially those of a biological nature.

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Oxidation of Ascorbic Acid to Dehydroascorbic Acid at Low Temperatures

IN OUR work with ascorbic acid we have had occasion to store some of our plant material in a deep freezer at a temperature of −20° C for several days and, on analyzing the material, we have found that all, or practically all, the ascorbic acid had been oxidized to dehydroascorbic acid. As we have not found this information in the literature, and feel that it may be of some importance to other investigators, it seems appropriate to publish this short note.

Table 1 shows several experiments with different plants, all demonstrating the same thing; namely, that at a temperature of −20° C oxidation is quite rapid, and, if one is interested in keeping the vitamin C in the reduced form, some other means of storing should be found. In enzyme studies it is a common practice to lyophylize the material to be used if it cannot be studied at once. Accordingly, some tomato leaves were lyophylized, and others were packaged and put in the deep freezer at once. The lyophylization reduced the weight to about 10% of the fresh weight, which is about the same as that obtained by drying the plants at 95° overnight. The dried material was packed in weighing bottles and stored at the same low temperature as the fresh material, and determinations were made at intervals. Over a period of 54 days of storage, only 16.7% more ascorbic acid had been oxidized than was present in this form in the original fresh material, whereas in the same material stored fresh at −20° for even as short a time as 24 hr there had been an increase in the oxidized form of 53.8%. After 54 days all the ascorbic acid was present as dehydroascorbic acid. The variation in total ascorbic acid at different periods of analyses is probably due to sampling rather than to any deterioration, as is shown in the last determination 54 days after harvesting.

TABLE 1

INFLUENCE OF TREATMENT AND STORAGE OF PLANT MATERIAL ON OXIDATION OF ASCORBIC ACID TO DEHYDROASCORBIC ACID (IN MG/100G OF FRESH PLANT MATERIAL)

Plant material	Treatment	No. days storage at −20° C	Total ascorbic acid	Dehydroascorbic acid
Cocklebur				
Leaves from flowering plants	Frozen	3	53.0	53.0
	Fresh			
Leaves from vegetative plants	Frozen	3	52.8	51.0
	Fresh			
Soybean leaves	Fresh	0	117.0	6.7
	Frozen	1	100.0	80.0
	"	2	100.0	83.5
Tomato leaves	Fresh	0	31.5	7.5
	Frozen fresh	1	29.0	22.5
	" "	3	27.0	24.0
	" "	19	24.7	24.7
	" "	54	30.3	30.0
	Lyophylized	1	23.5	9.0
	"	3	23.0	9.5
	"	19	25.7	10.3
	"	54	31.3	12.7

It is rather surprising that there should be this rapid oxidation at such a low temperature. Mills, Damron, and Roe (*1*) report that in orange juice stored at 2° C there was a slow oxidation, and that after 38 days of storage there was still about 30% of the total vitamin C present in the reduced form.

Reference

1. MILLS, M. B., DAMRON, C. M., and ROE, J. H. *Anal. Chem.*, **21**, 707 (1949).

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Passport Procedures

AT HIS news conference on June 18 Secretary of State Dean Acheson made the following extemporaneous remarks concerning passport procedures:

I should like to talk with you for a few moments about the passport work of the Department. I am doing this because it has been the subject of discussion throughout the country pretty much over the years but rather intensively in the last few weeks.

The criticisms of the Department fall into two main categories.

One of them comes from very determined efforts which have been made by Communist organizations who attack the Department and undermine its work in order to obtain greater freedom of movement for people engaged in the Communist movement and in Communist-front organizations. There was recently a meeting in Chicago which was devoted to this purpose. It was a meeting of an organization called the "American Committee to Survey Labor Conditions in Europe." This was an organization which had sent propaganda groups to Moscow, and the purpose of the meeting was to start a vigorous campaign against the State Department because of its passport policy with respect to Communists. With that criticism I am not concerned. We expect that, and that, of course, is a matter to which we will pay no attention.

There are other discussions by people who are not in any way affiliated with such groups who are sincerely worried about procedures, although they do not, I think, attack the principles upon which we operate. They are concerned about our procedures, and it is about those procedures, against the background of the passport, the development of the passport over the past 30 years or so, that I wish to speak.