

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  $-20^{\circ}$  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

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 $-20^{\circ}$ 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	
	Lyophylized	54	30.3	30.0	
		1	23.5	9.0	
		3	23.0	9.5	
19		25.7	10.3		
54	31.3	12.7			

plants, all demonstrating the same thing; namely, that at a temperature of  $-20^{\circ}$  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 lyophilize the material to be used if it cannot be studied at once. Accordingly, some tomato leaves were lyophilized, and others were packaged and put in the deep freezer at once. The lyophilization reduced the

weight to about 10% of the fresh weight, which is about the same as that obtained by drying the plants at  $95^{\circ}$  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  $-20^{\circ}$  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.

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  $2^{\circ}$  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.

In the first place I would like to say a word about Mrs. Shipley, who is the head of the Passport Division in the State Department. She has been there for many years. I myself have been a colleague of Mrs. Shipley for the past 12 years, and in various capacities which I have held in the Department I worked very closely with her. I do not know any person in the service of the Government who brings to her work greater devotion, greater sense of public obligation and public duty, greater knowledge of the field, and greater skill than does Mrs. Shipley. I believe quite fortunately that view is widely held throughout the country. I have the greatest confidence in Mrs. Shipley and her administration of the Passport Bureau.

Now a word about passports and this matter of freedom of travel. Before World War I the passport was a fairly rare document. When I was a young man, the first two or three times that I went abroad one could, if one wished, come to the State Department and obtain a passport if the Government felt one was entitled to this official identification. But most people did not do that. It was not required, and they traveled perfectly freely, got on a boat and went where they wished to go.

During World War I an official document permitting one to travel was required almost universally, and this involved a sanction on the part of at least two governments. The government of the traveler's own country gave him an official paper signed by a high official of the government identifying the person as a citizen of that country and sponsoring to that extent his travel abroad. The receiving country then had to look at the document and grant a visa. So travel took on a more official character than it had before.

The American Government always in issuing passports exercised some judgment, and was required to exercise some judgment. Nobody has any serious question of the fact that people who are fugitives from justice, people who are mentally ill, people who are setting out on a mission adverse to the national interests of the country concerned cannot expect to be given an official document permitting them to travel. That has always been true, and under the law the Secretary of State has to exercise his discretion and his good sense in this matter. I believe that that has been exercised fairly and properly as long as I can remember, and that deals strictly with the administration of Mrs. Shipley.

Recently other considerations have become involved: the growth of the Communist conspiracy; the growth of the Communist front organizations; the growing awareness by both our courts and Congress that members of this organization were engaged in activities detrimental to the national interests of the United States have led the Congress to pass legislation dealing with people of this sort which is not yet operative and has led the Department to give consideration to the appropriateness of issuing passports to such people. This, by no means, concerns the great category of people who are denied them. There are all the other categories which I mentioned earlier.

Now, I would like to put this whole matter in a certain statistical perspective. For instance, between July of last year and the thirty-first of May of this year, 325,000 passports have been issued by the Government of the United States. During that period, 95 requests for passports were denied because of evidence of membership in subversive organizations, and another 95 passports were recalled, after action by the passport holders indicated subversive affiliation or intent. So, this is the quantitative dimension of the problem with which we are dealing. That, of course,

does not solve the problem at all. Whether only 95, or only one, have been denied, if that one was improperly denied through improper procedures or was whimsically denied, or unjustly denied, that would be wrong and would require corrective action.

In my judgment, there has been no arbitrary action of any sort. The action has been taken to the very best judgment of the persons concerned. Our procedures are not perfect. The judgment of these human beings may not be perfect, but it is exercised as fairly and as well and as much in the devotion to the public interest as is possible for human beings to do. We can always improve our procedures. We are always trying to improve our procedures. They are flexible in growing, and we are at work now on improving them.

Perhaps you would like to know what they are. They are as follows: When an application is received for a passport at the Passport Bureau, the files of the Department are examined; and if there is nothing in those files to raise any questions regarding the person concerned, the passport is issued immediately, as a matter of routine.

Then, we come to the second step. If there is adverse information, it is reviewed at a higher level in the Passport Division, and if the information is not such as to provide reasonable grounds for belief that the passport should be denied—and the reasons for denial I have already mentioned to you—if there are not reasonable grounds from the totality of its evidence to indicate the applicant does not fall within any of the categories mentioned, then the passport is issued.

Sometimes the information in our files is not adequate to reach a fair decision. In that case, the proper investigative bodies of the government are asked to make a further examination regarding the applicant and to provide all the information regarding him or her, which they can collect. When this has been collected, the file is sent to the Security Division of the Department, where the information is evaluated to see whether it is mere gossip—whatever is said about the person in regard to any of these criteria—whether it is or is not in the judgment of the Security Division persuasive.

If, after that review, it does not establish factual evidence sufficient to deny a passport, the passport is issued. If there is sufficient factual evidence, it is denied, and the applicant is informed that his travel is not considered in the best interests of the United States.

Third, if the case is complicated in any way—if there are difficult questions in it—the Passport Division submits the files and its decision to higher levels in the Department for decision, before the applicant is denied or granted a passport. The person concerned is informed that he may supply any additional information or may discuss the case with officials of the Passport Division. This has been done in a great number of cases, and new evidence furnished by the applicant has often resulted in the issuance of a passport.

Fourth, if the question of denial is based on the ground that the travel of the applicant may be harmful to the national interests of the United States, the political officers of the geographic areas in which the travel is to take place are consulted, and they take part in the decision as to whether the passport should be granted or rejected.

Fifth, any new evidence or information which the applicant may submit is referred to the officers who first evaluated the case. These officers are required to evaluate the new information, and give their opinion as to whether the passport should or should not be issued.

Sixth, although we cannot violate the confidential character of the passport files by making public confidential information contained therein, the disclosure of which would affect the national security, an effort is made to inform the applicant of the reasons for the denial to the fullest extent possible within the security limitations.

The procedures which I have just described are pointed out to him, so he may have opportunity to present his case. He is also informed that he may be represented by counsel of his choice and that he or his counsel, or both, may be heard by the chief of the Passport Division, or some other responsible officer.

At the present time, the Passport Division does, in the way that I have described, hear many appeals from a preliminary decision to deny a passport. In many cases this hearing, generally conducted by the chief or assistant chief of the Passport Division—far from being capricious or arbitrary—has led to the reversal of the preliminary procedure, and granting of the passport.

Furthermore, the chief of the Passport Division does not have final authority in the denial of passports, and the fact that this is so is made known to the applicant so that the applicant can ask for what further consideration he or she thinks necessary.

These are the procedures under which we are operating. As I say, they are the best that we have been able to develop to date, in order to protect both the interests of the United States, which are very great in this matter, and the interests of the citizen, which are also great.

We are continually reviewing these procedures. They are being reviewed now, as they have been many times before; and if any improvements can be found, anything recommended by Mrs. Shipley, by the Deputy Under-Secretary in charge of Administration, or by the Legal Adviser, all of whom are interested—deeply interested in perfecting these procedures—those improvements will be put into effect.

We are doing the best we can. We know that this is a situation in which we never can please everybody because we must, in the national interest, reject some applicants, and those applicants are always going to feel aggrieved by our action. Therefore, there will always be criticism. Some of the criticism will be honest criticism. I don't for a moment wish to impugn the motives of any of the persons other than this group of Communist-front organizations who are attacking the State Department in this

manner. We know that our task is difficult. We know that we have great public responsibilities which we are trying to discharge in the best way that we can. We are doing the best that we know how to do.

## Cationic Detergents in the Babcock Test

A MODIFICATION of the Babcock test for homogenized milk has been developed that employs cationic surface-active agents. The quaternary ammonium compounds used are capable of dispersing milk proteins when in the cationic form, even though the proteins are not completely hydrolyzed. The ability of the detergent to disperse proteins in the cationic form and the additional lyophilic property of the substance make possible the successful de-emulsification of milk fat in homogenized milk.

The regular Babcock equipment reagents and procedure required by the AOAC and now used in dairy laboratories are employed in this modified test. In addition, 9 g of a 50% solution of alkyl dimethyl benzyl ammonium chloride is mixed with each liter of sulfuric acid, and a meniscus remover is used when the readings are made. The alkyl dimethyl benzyl ammonium chloride used in this study is known as "BTC" and is manufactured by the Onyx Oil and Chemical Company. The detergent is stable in concentrated sulfuric acid for at least two weeks.

The results obtained by this test had an average mean difference of -0.04% fat, a standard deviation of differences of 0.06% fat, and a standard error of mean differences of 0.02% fat when compared with an ether extraction procedure. Readings in this method are made to the nearest 0.1% fat.

Less skill is needed to obtain satisfactory results with this test on homogenized milk than is required with the Babcock test on regular milk.

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## Book Reviews

*Color in Business, Science, and Industry.* Deane B. Judd. New York: Wiley; London: Chapman & Hall, 1952. 401 pp. \$6.50.

To attempt a book on color that will appeal alike to the businessman, the scientist, and the industrialist is a bold undertaking. The interests of the businessman do not ordinarily extend beyond those aspects of color that can be evaluated in monetary units. The scientist is naturally curious concerning all color phenomena, and has a very real concern with the techniques of color measurement. The industrialist cannot be oblivious to either the constant pressure of competition in a free-enterprise system or the possibility that new techniques in color measurement will

contribute to greater efficiency of mass-production methods.

That Dr. Judd has been able to pace a volume so as to appeal to three such diversified groups and to talk to each group in "the language of the trade" is no mere coincidence. Because of his long association with the Colorimetry Section of the National Bureau of Standards, he has probably had occasion to discuss color problems with more individuals than has any other person in history. He has drawn on this experience to keep the reader constantly reminded of the need for a more widespread understanding of color by combining the discussion of some of the more erudite concepts with reference to their practical