and solely on the basis of their demonstrated capacity to carry out the purposes of the Foundation and their fitness to perform the duties of their office,'' even scientists should know enough of practical politics to realize that those making appointments can always find ''fit'' persons among the ''deserving'' of their political views. The fine objectives of this movement for federal aid to science might easily be perverted or even blocked should the control of the funds or their administration get into the hands of the wrong persons. Selection of key personnel by nonpolitical scientific groups is a wise and even essential safeguard. The Federal government already has many thousands of scientists in its employ—about 40,000 according to the last estimate I saw.

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In Support of a September Meeting of the AAAS

We wish to add our support to the suggestion made by Prof. R. S. McEwen (*Science,* 1946, 103, 178) that the AAAS meetings be held at a season other than the Christmas holidays. As Prof. McEwen says, attendance at winter meetings is usually made disagreeable by bad weather, crowded trains, colds, and disrupted family gatherings. Furthermore, there is no reason why biologists should have to spend their short winter vacation attending scientific meetings, while chemists, physicists, and various other professional groups schedule and attend their meetings with little regard for college teaching schedules. On the whole, it seems that early September might be the best time for a meeting. An objection might be raised by some biologists who work up the results of their summer's research during the autumn and present them at the winter meetings, but this objection is minor and could usually be overcome. Let us give serious consideration to Prof. McEwen's suggestion and try another September meeting.

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Radio Echoes From the Planets

The recent announcement of the reception of radar echoes from the moon have aroused interest in, and raised inquiries concerning, the absorption of microwaves by those gases which are present in the atmospheres of the various planets. A general investigation into the microwave absorption has been made at these Laboratories and some results presented before the New York section of the American Physical Society (*Phys. Rev.,* 1945, 68, 284). It was found that of the 50-odd substances which are gases at room temperature and pressure, 15 strongly absorb microwaves. Absorption may be characterized as either resonant or nonresonant. In methyl fluoride the absorption is largely nonresonant. At a wave length of 1.0 cm. this gas at normal temperature and pressure will reduce the power in a plane wave by 50 per cent for each 23 feet of gas traversed by the wave. At 3.0 cm. the absorption is 75 per cent as large as it is at 1.0 cm. Ammonia, on the contrary, exhibits resonant absorption, with the maximum in the curve under the above conditions occurring at 1.25 cm. while at 3.0 cm. absorption falls to 20 per cent of its maximum value. This gas is found in the atmospheres of both Jupiter and Saturn. It might be thought that considerable information would be given by varying the frequency of the radar transmission, but this is not the case. Owing to the high gas pressures found on these planets and the presence of other nonabsorbing constituents in their atmospheres, the width of this absorption region is so great that it is likely that both microwaves and waves in the ultra short radio spectrum will be totally absorbed in the atmospheres surrounding these planets. The transmission paths involved in radar sounding are so great that a very small absorption coefficient will give rise to total extinction. The results of further radar experiments should prove of value in increasing our knowledge of the constitution of planetary atmospheres.

For the information of those who are interested, the list of gases showing large absorption for microwaves includes the methyl and ethyl halides, the gases known commercially as Freon, three of the amines, ammonia, and sulphur dioxide. In fact, all nonplanar molecules having a dipole moment which have been tested thus far in the Laboratory show strong absorption in the microwave region, and in general this absorption is of the nonresonant variety.

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Competition Between Two Entomogenous Bacteria

The antibiotic activity of *Bacillus larvae,* the causal organism of American foul brood of the honeybee, was recently reported by E. C. Holst (*Science,* 1945, 102, 593–594). A phenomenon suggesting antibiotic activity is to be found in two other entomogenous bacteria, *Bacillus popilliae* Dutky and *Bacillus lentimorbus* Dutky, the causal organisms of two types of milky disease of Japanese beetle larvae. The vegetative forms of these two bacteria are similar in appearance, but the spore forms are readily distinguishable. The bacteriemic infection of the host is very similar in the two cases. Neither bacterium has been cultured artificially with any degree of success.

Both types of milky disease, described by S. R. Dutky (*J. agric. Res.,* 1940, 61, 57–68) and designated by him as Type A (*B. popilliae*) and Type B (*B. lentimorbus*), can be individually induced in host larvae by injection into the body cavity of adequate numbers of the respective bacterial spores. Both types of bacterial parasitism, however, do not occur in the same host individual. If a mixture of *B. popilliae* and *B. lentimorbus* spores is injected into a host larva, only Type A or Type B develops —not both. The relative spore dosage largely determines which type is successful. In most cases, Type A

develops, but if the number of *B. lentimorbus* spores injected greatly exceeds the number of *B. popilliae* spores, Type B may develop. Under certain other dosage conditions Type B will develop at the expense of Type A. Time also is a factor. If *B. lentimorbus* spores alone are injected into host larvae, and two days later *B. popilliae* spores are injected into the same larvae, growth of *B. lentimorbus* alone occurs except when larger dosages of *B. popilliae* are used. In the latter case the time advantage is overcome, and Type A milky disease will develop. If *B. popilliae* is given the time advantage, only Type A develops.

In direct competition, *B. popilliae* seems more potent than *B. lentimorbus*, but it is not necessarily more infectious upon injection. When spores of the two bacteria are separately injected into host larvae, fewer spores of *B. lentimorbus* than of *B. popilliae* may actually be required to cause a given rate of infection.

The effect of *B. popilliae* and *B. lentimorbus* on the growth of other microorganisms has not been investigated, but antibiotic activity might explain the mutually exclusive development of these two types of milky disease in Japanese beetle grubs. This is offered only as a suggestion until more is known of the physiological action of these two bacterial parasites. A more detailed account of the competition between *B. popilliae* and *B. lentimorbus* will be published at a later date.

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Relief Packages for Scientific Workers in Western Europe

Several of us have recently often been asked for information about the needs of our colleagues in Western Europe, about the most suitable things to send them, the best way to send these, etc. It seems, therefore, that it may be useful to broadcast the following information:

(1) There is still a serious shortage of food in all countries of Western Europe which have been occupied by the Axis. Though conditions have improved considerably since the liberation of most of these countries, the amount of calories and vitamins which our colleagues and their families receive is very often still inadequate, and, moreover, it is nearly always given in forms which are dreadfully monotonous.

(2) Scientists in North America who feel a desire to assist their colleagues in Western Europe by sending one or a few relief packages should not hesitate to do so and should do this in the near future. If one has had dealings in the past with an outstanding colleague, one should most positively not be afraid to embarrass him with a gift package. If he does not need it, which is not likely, he will turn all or part of the contents over to one of his associates who may need it more. Packages can also be sent addressed to: The Staff, ———— Laboratory, University of ————.

(3) It is advisable to use the folding boxes sold at Woolworth's and similar stores for sending packages to men in the armed forces serving overseas (size, about 8″ × 12″ × 15½″). Experience has shown that these comparatively small boxes go through much quicker and stand up much better in transit than larger boxes. Fill boxes as tightly as possible and wrap each article in kraft (better than newspaper). After the box has been filled and small openings have been closed with such useful things as matches, pins, adhesive tape, razor blades (all wrapped in kraft), it is best to close the boxes with gummed tape. The entire box should then be wrapped in strong kraft. It is well to put an address directly on the box and one outside on the package. Close with twine (not tape) and tighten well. Only articles which are dry or have been packed in well-closed tins should be sent. Glass jars should never be sent.

Cigarettes (unless already wrapped in cellophane), soap, tea, etc. should be wrapped first in wax paper and then in kraft.

(4) Though it is not possible to give ironclad rules concerning the things most needed and appreciated, it is safe to assume that the following things will be particularly welcome: canned meat, canned vegetable fats, canned butter, canned peanut butter, sweetened cocoa (much better than unsweetened), tea (takes less space than coffee), coffee (now again available in tins), soap (toilet soap or Ivory, scentless), toothbrushes, tooth powder (less risky than tooth paste), razor blades, shaving cream (sticks), needles, safety pins, pins, yarn, thread, shoe soles, shoestrings, elastic (very much needed!), matches (wrap in kraft and use to fill small spaces in packages), etc. Dried fruits such as raisins, prunes, figs, and dates are always welcome, as well as hard candy (often safer to send than chocolate).

Cigarettes are in many cases more welcome than anything else; they are still often used for unbelievable exchanges for goods or services. Some colleagues prefer tobacco (now again in tins) or cigars (should be individually wrapped in cellophane).

Colleagues with children will appreciate milk powder, seedless raisins, and an occasional toy.

(5) Postal regulations permit the sending of one package a week to one addressee. Packages should be clearly marked: "Gift—Limited Value." Here follows a list of countries with some information concerning rates, customs forms needed, and limit of weight per package.

In the following countries the limit of weight per package is now 11 lb., the cost 14¢ per lb., and Post Office Forms 2966 and 2922 must be filled out and attached to the package: *Norway, Denmark, Finland.*

Poland. The limit is 11 lb.; 14¢ per lb.; forms needed: Nos. 2966 (two copies) and 2922.

Netherlands. The limit is 11 lb., 14¢ per lb.; forms needed: Nos. 2972 and 2922.

Netherlands Indies. Small packages cannot be sent to the Netherlands Indies, but small cases can be shipped via Messrs. Funch, Edye and Company, Inc., 25 Broadway, New York 4, New York, from whom further particulars may be obtained.

Belgium. The limit is 11 lb.; 14¢ per lb.; forms needed: 2966 (two copies), 2972, and 2922.

France. The limit is 11 lb.; 14¢ per lb.; forms needed: 2966, 2967, 2972, and 2922.