At Point Barrow I was engaged in studies that made it necessary to obtain both qualitative and quantitative data on the insect fauna. Thus, in order to follow the seasonal progression of this fauna, composed essentially of small-sized insects, daily periods of aspiration approximated 4 to 6 hr. It is believed that these protracted periods of daily aspiration during the summer contributed to a case of "myiasis" that is without parallel in its origin and nature. Insofar as I have been able to ascertain none of the insects reported herein have been previously shown to cause "myiasis" in man.

Since it is likely that the aspirator will continue to be an important means for the collection of small-sized insects, I would like to suggest that those persons who utilize this apparatus so modify it that the flow of air will not be toward the operator's mouth. Apparently the insects gained access to the sinus as eggs which passed through the fine mesh brass screen. Admittedly, it is almost unbelievable that the insects should have undergone several stages in their metamorphosis within the sinuses, but since the screen was so fine as to preclude the possibility of the aspiration of adult insects, it must be concluded that such was the case.

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Nuclear Emulsions for Electron Microscopy

In our recent article [*Science* **119**, 441 (1954)] describing the use of Ilford nuclear emulsions in gel form, we should have given the number of the emulsion as G-5 rather than C-2. As a matter of interest, Ilford Limited, (Ilford, London, Eng.) will supply the C-2 as well as other nuclear emulsions in gel form upon request.

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Scientists' Definition of Public Relations Not Scientific

In a recent issue of *Science* [**118**, 420 (1953)] there was an excellent article on "Science and public relations" by Herbert Curl and Nicholas Rescher of the Marine Corps Institute. The introductory paragraphs and such phrases as "science cannot afford the risks of isolation or misunderstanding" were well put. The half-dozen illustrations, which "have a portentous aggregate effect," accurately portrayed some segments of the total problem—lack of effective two-way communication between the nonscientist and the scientist.

Some general suggestions were made to improve the situation. First, emphasis was placed on the role of the individual scientist in his community by taking full advantage of his nonscience contacts to improve the public regard for science's contribution to society. Curl and Rescher's key solution lay in "the formation of a single, nonprofit, non-Government institute, without partisan political affiliations, whose sole aim would be the improvement of the public relations of science." This was advocated to "best utilize the power of effectively coordinated information."

Unfortunately, however, the description of this institute was followed by this statement: "It should employ the tools of modern public relations without succumbing to its methods or aims."

As one who is dedicated to helping interpret the medical sciences to the American public and one who is intent on helping build up the professional status of public relations, I dislike the phrase "without succumbing to its methods or aims." I believe that, to most scientists this phrase reads: "We do not believe in newspaper headline grabbing or publicity stunts (methods) as a means of giving the scientific world and its personnel undue popularity (aims)."

We must first differentiate between the general use of the term "public relations" and its application to the duties of "public relations" personnel. Actually, there is no necessary connection. The first has come to mean to do what is good, intelligent, kind, courteous, and appropriate. The second refers to the task of writing, exhibiting, speaking, and so forth, or to use a more inclusive term, communicating.

Just as the scientist makes sure that his findings are accurately, honestly, and truthfully communicated to his associates and placed in the literature, so the public relations man seeks to convey accurately to the public the concepts, disciplines, successes, problems, and workings of science. Such information will contribute to the understanding on the part of people for the role of true science in today's society.

As science seeks the aid and assistance of competent public relations people, the latter are duty-bound to promote the use of such communication channels and techniques as are acceptable to the scientific world. In other words, public relations activities in science *are not* being handled properly if they do an injustice to the concepts and disciplines that have made science an important contributor to society's welfare. This fact constitutes the greatest challenge to public relations personnel working in the sciences.

A balanced approach to the problem of communicating science and its role to the masses will ultimately be found when education, research, and medical centers throughout the nation approach the problem as industry is doing—that is, by developing communications at the local or community level. A national institute will aid in telling the story of science, but obviously a grass-root approach at every center where there is a concentration of scientists will do what a national organization cannot. A local community program can and should include internal communications within the institution, guided tours for selected groups, speakers' bureaus, open-house events, external publications for the nonscientist, exhibits at public libraries and county fairs, and localized TV, radio, and press features.

Success of such a program, however, is dependent on the willingness (i) of the scientist to communicate, and (ii) of the public relations man to adjust his promotive characteristics to the disciplines of science.

Effective public relations *is not* so much a matter of headline grabbing and photographic tricks as it is of advancing the welfare of a cause by identifying its objectives with the public good and telling its story to people, with the sole intent of ultimately bringing its benefits to more people.

By employing the techniques of modern communications and espousing the aims of good public relations, science can and will bring its benefits to more people.

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Thermal Precipitation Analyzed

I read with considerable interest the communication of B. W. Wright (*1*).

It would be difficult for us to measure directly the amount of heat transferred to the cold plate, since there is very little change in the temperature of our cooling water. Also, owing to losses to the surroundings, the amount of heat utilized is only a fraction of the power input. However, we can arrive at a figure for the required power input from a conductivity calculation. If suitable values are inserted into the conductivity equation, $Q = kA\Delta t/x$, where Q is the amount of heat transferred, k is the mean thermal conductivity of air, A is the area of the heated surface and $\Delta t/x$ is the temperature gradient, the value obtained for the power input of a typical run was 6.1 w. The total electric power input was 78 w. This run was with MgO smoke at 600 ml/min, a spacing of 0.010 in., and gave a deposit 3.9 cm in diameter.

I have derived an equation that describes the operation of this type of precipitator by utilizing the equation for the thermal force given by Epstein (*2*) and confirmed by Saxton and Ranz (*3*). Making a force balance on a particle that is being acted on by a viscous drag force, a gravitational force, and a thermal force, I arrive at the equation for the case of the precipitators described by Kethley *et al.* (*4*) and Wright,

$$\frac{q}{\pi z(z+2r)} = \frac{D_p(\rho_p - \rho)g}{18\mu} + \frac{3}{2}\left(\frac{R\mu}{MP}\right)\left(\frac{k}{2k+k_p}\right)\frac{\Delta t}{x}, \quad (1)$$

where q = volume rate of flow, z = length of deposit (= radius of deposit − radius of inlet opening), r = radius of inlet opening, D_p = diameter of aerosol particle, ρ_p = density of aerosol material, ρ = density of gas, g = gravitational acceleration, μ = viscosity of gas, k = thermal conductivity of gas, P = gas pressure, k_p = thermal conductivity of aerosol particle, R = gas constant, $\Delta t/x$ = thermal gradient between hot plate and cold plate, M = molecular weight of gas.

It should be noted that Eq. (1) is of the form

$$V = A + B\Delta t/x,$$

where V is a function of the precipitator geometry and aerosol flow rate, A represents the component of the particle motion attributable to gravity, and $B\Delta t/x$ is the component due to thermal force. In practice, we plot the left-hand member of the equation against the temperature gradient and get a series of points that approximate a straight line for aerosols of the same material and size distribution.

The reason good correlation of performance with power input has been obtained by Wright and others is that, to a large extent, the power input is a function of the thermal gradient.

Examination of the equation also indicates that the performance of a thermal precipitator depends on the absolute temperature of the system only to the extent that the thermal conductivities of the gas and aerosol material and the gas viscosity depend on the absolute temperature.

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The Fungistatic Action of Squalene on Certain Dermatophytes *in Vitro**

Squalene is an unsaturated triterpenoid hydrocarbon that was originally isolated from the liver oil of the shark (*1*). Among its other occurrences, it was found to be present in the fat from ovarian dermoid cysts (*2*). It has also been found in normal human sebum (*3, 4*).

An investigation was undertaken in order to learn whether squalene might exert a protective action on skin. This could come about because squalene, which has the consistency and appearance of mineral oil when pure, rapidly takes up oxygen on exposure to air and forms a yellow viscous oil with a high peroxide content.

It was found that undiluted squalene (*5*) on the surface of Sabourand's agar prevented multiplication of *Microsporum mentagrophytes*, *M. audouini* (*6*), and *M. tonsurans* (*6*). Undiluted mineral oil under the same conditions did not inhibit growth. In the case of *M. gypseum* (*6*), squalene inhibited growth in some instances, partially in others, and at times not at all. Squalene caused no inhibition of the multiplication of *Aspergillus terreus*.

Some evidence suggests that squalene exposed to air for a time prior to use may be more effective in inhibiting growth than pure squalene. These observations suggest that squalene may be a protective agent on the skin. It is hoped that this communication will stimulate clinical investigation of this material.

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