May 13, 1968

Dr. W. G. Schneider

Re: Division of Applied Physics

The Applied Physics Division has undertaken a number of tasks but the more important of them fall in the following categories:

1. Standardizing Measuring Devices for Industry and Government.

This is a relatively small part of the total effort.

2. Developing Primary Standards.

This type of work has involved a great deal more effort than item (1). Some such research is necessary if the division is to maintain competence in item (1) but clearly the efforts in this area go beyond the requirements of Canadian industry or government.

3. Engineering Physics.

Many areas of classical physics have been taken over by engineering departments but certain of them have remained with physics (acoustics, optics ...). The Division has active groups working in these areas.

It appears desirable that the three types of activities listed above be continued. The work on standardization is of practical value and also is of considerable public-relation value. The "engineering physics" groups are unique in Canada and have undertaken and completed important tasks in areas in which they alone have a competence. The development of primary standards has brought considerable recognition to N.R.C. but much of the activity must be judged on the same basis as other "pure" science in terms of results achieved and costs.

I believe the principal weakness of the Division lies in the fact that, in carrying out the activities outlined above, it is lacking in those parts of physics which are at the heart of modern physics (i.e. research which could be published in the Physical Review). This has resulted in a loss of contact with universities and other centers where physics, as a subject, is advanced. There is a tendency for scientists to move with age from the frontiers of science into applied areas and this has often proved to be a satisfying and productive transition. In an applied physics division (and worse still in a standards division) young men must be recruited directly into applied work. It is unlikely that such

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a Division will attract the best graduates from universities and if it does not now attract the best, the separation between the Division and the best physics will grow with time.

The Division of Pure Physics is somewhat better situated with respect to modern physics but it also is weak in this area since a considerable portion of its activities ~~be~~ are nearer to chemistry than physics. It would be unfortunate if in a reorganization of the activities of the N.R.C. laboratories, the present physics activities were to be so dispersed that there remained no laboratory which could establish a reputation for first-rate work in modern physics.

I therefore suggest that in any reorganization of the N.R.C. laboratories, the ultimate aim should be the establishment of a single physics division. This division should continue those activities in which the Division of Applied Physics has established a high degree of competence and at the same time maintain work in the frontiers of modern physics in a limited number of fields. Such a division could continue the present activities of the Division of Applied Physics without interruption, it would be able to recruit some of the best young men from the universities and it would be able to interlace pure and applied activities such that the staff and new techniques could be used to the best advantage.

AED:mb

A. E. Douglas.