now been shown to be biologically active (*12*). Furthermore, the conclusions are completely consistent with a large body of other information which has since accumulated concerning insulin receptors. It is important to realize, however, that the mechanisms by which insoluble insulin derivatives activate cells are probably very complicated and different from those that normally occur with native insulin (*13*). This area of understanding is constantly expanding and there are still many uncertainties and experimental limitations.

The merits and weaknesses of (*1*) should be judged 5 years later in context of the rapid and extensive developments that have since transpired in the field of hormone receptors in particular and membrane receptors in general. For example, important problems in the area of insulin receptors which currently merit intensive thought and investigation include the isolation and purification of receptor and related membrane structures with the ultimate hope of reconstituting an active system in vitro, determination of the role of membrane fluidity in receptor function, and elucidation of the molecular processes by which hormone-receptor complexes may modify membrane localized enzymes (for example, adenylate cyclase, guanylate cyclase, and phosphodiesterase), alter permeability barriers, or release yet unrecognized chemical mediators. We welcome comments and criticisms and we encourage Butcher *et al.* (*8*) as well as others to communicate directly with us concerning any aspect of our work which may need further clarification and which would mutually assist in our understanding of these scientific problems.

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Glaciers and Nutrients in Arctic Fiords

Apollonio (*1*), in his study of the effects of glaciers in Arctic fiords on the quantities of nutrients in the upper layers, has shown that the two fiords studied in Ellesmere Island, South Cape Fiord and Grise Fiord, differ in the quantity of nitrates in the upper layer. He ascribes this difference to the erosive effects of the glacier in South Cape Fiord in bringing nitrates to the fiord water. It seems to me, however, that Apollonio's evidence favors an upwelling effect of the glacier rather than an erosion effect. Both fiords contain similar concentrations of nitrates in their deeper waters (South Cape Fiord is considerably shallower than Grise Fiord). It is only in the upper layers, in the water with a density (σ_t) less than 26.8, that the difference in nitrate concentration is apparent. This suggests that the effect of the glacier is induction of upwelling of the deeper water to the surface rather than erosion of rocks on land. The agency of glaciers (also of icebergs) in inducing upwelling at their sea faces was suspected early in the study of ice in seawater (*2*, *3*). Hartley and Dunbar (*3*) demonstrated quite unequivocally the upwelling effect at the glacier face.

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