

techniques have been developed which are helping physicians in their treatment of patients with visual disorders.

Just recently a grantee designed and built a retinal densitometer with which he can measure in 10 seconds the amount of visual pigment upon any selected region of the human retina. With this he is measuring visual pigments, and is studying bleaching and visual function and the electrophysiology of the retina.

An instrument for measuring corneal thickness by optical means has been developed. This type of apparatus can be used on any modern slit lamp. It increases the accuracy of this type of measurement in normal corneas and those which are opaque. It practically eliminates distortions present in older instruments. It assures that the measurement is being made while observing the cornea at exactly the right angles.

A model of the retina has been developed. Electro-oculography has been developed as a technique for clinical usefulness in understanding rod and cone anatomy and connections.

SUMMARY

As can be seen from this brief review of the field of vision, the research is extremely complex and the causes of blindness many. Unsolved problems in the field are legion, but there are many hopeful elements: great strides in research have been made in the last few years; there are now more well-trained investigators available than at any previous time; more research projects are underway than ever before; and there are more well-equipped eye research centers. This does not mean that the needs for manpower, money, and facilities have been met, but rather that research is moving in the right direction.

Mr. ROGERS. Do you give them any guidance in your research with your clinical research projects? Are they given particular projects to work on or are particular goals set? Is any of those done?

Dr. MASLAND. I can give you some examples. Let me mention for example Dr. Cogan at the Massachusetts Eye and Ear Infirmary. The title of his project is "Intrinsic and Extrinsic Ocular Disease Investigations." It is a very broad clinical program concerned with glaucoma, uveitis, the control of ocular movements by the nervous system and abnormalities of the retina.

Another one is Dr. De Voe at a corneal center at Columbia in New York City. He is concerned particularly with problems of the surface membranes of the eye.

We have one on the west coast, Dr. Thygeson, immunologic diseases of the eye. He is particularly interested in inflammation and infections. Thus each of these centers has a major focal point.

Mr. ROGERS. A particular area of the eye?

Dr. MASLAND. Yes. Basically, our philosophy has been to select people whose area of interest relates to a major concern of the Institute and then to let them carry out their research. We provide them with support, but the development—

Mr. ROGERS. But you are guiding your programs into these areas where you think work should be done.

Dr. MASLAND. Yes. This is accomplished through a special subcommittee of the Council which was mentioned briefly.

Mr. ROGERS. In these clinical research centers, do you establish the clinic itself? Do you fund the establishment? Do you go into construction at all, or is it entirely a staff function, or what?

Dr. MASLAND. The responsibility of the National Institutes of Health is limited to the support of research and research training.

Frankly, I think this is a cause of uncertainty within the country as a whole. There is a lack of understanding that we do not have the responsibility or the authority to support clinical services.

Mr. ROGERS. That is what I was wondering about when you say you established 11 clinical eye research centers.