

Finally, he serves as a scientist, to determine which solar events are of interest and to direct the system to observe these events.

There are a number of scientific experiments that have been adopted.

Mr. GURNEY. How does that telescope compare in size or magnification to these telescopes we are now using?

Dr. MUELLER. The largest optics in this particular instrument is a 12-inch mirror. Now, I would hasten to point out that this telescope tube has in it some 13 major instruments, so that it really is a complete observatory housed in this telescope tube and they are all pointed with the same tube at the Sun and they make some five different kinds of measurements that permit you to observe what is happening during the course of the solar events, the major flares, and so on, at different frequencies, and wavelengths of light that you just couldn't observe here on Earth.

It will be the first comprehensive examination of the solar phenomena during a peak period of solar activity. There is no comparable system here on Earth.

Mr. GURNEY. In other words this will give us an opportunity to increase our knowledge very considerably over what we gain from telescope observation.

Dr. MUELLER. We expect this will result in a new breakthrough in our understanding of the solar system. It may lead to a better understanding of how the Sun works which in turn will provide us with information as to how this tremendous source of energy operates. Then it may lead to a better understanding of energy here on Earth.

The releasing of energy is the most important single thing that determines the course of all of mankind's progress.

Mr. GURNEY. Many fields will benefit from this sort of astronomical observatory?

Dr. MUELLER. I am sure the scientific community as a whole is expecting a great deal to come from this and it is strongly supporting it.

Mr. TEAGUE. Mr. Fulton.

Mr. FULTON. My question would be, looking at the corona, its spots and the Sun—what is the purpose of the telescope?

Dr. MUELLER. Let me go through the instruments themselves.

Mr. FULTON. Why don't you use the same type of instrument in space that is being used in Kits Peak at the high altitude observatory in Arizona where you have a long focal length of about 300 feet and up here you would have no weight so that you would have no trouble getting a very large screen that probably by TV pictures would be taken back to Earth rather than use a 12-inch glass?

Dr. MUELLER. In particular, some of the optics have an effective length which is several times 150 inches but generally the kinds of experiments that we are doing here don't require a tremendously long focal length. Most of them are spectrographic measurements in areas of the spectrum which are not available on the Earth at all because of the atmosphere.

Mr. FULTON. Is there a temperature range as well as light? Are you going through the various spectrums of light?

Dr. MUELLER. Yes, we are looking through the whole spectrum from X-rays through visible light.