lieve that it results from chemical reactions in the upper atmosphere instead. What causes airglow to appear at certain times, in certain places, with varying intensity, and sometimes with pronounced "patchiness" of intensity are questions scientists hope to answer.

Scientists are interested in discovering how extensive the aurora is, whether the aurora borealis (northern lights) is balanced by similar displays in the aurora australis (southern lights), the exact times of appearances of the aurora and their durations, and the relationships between the aurora and other unusual manifestations in the terrestrial and solar physics, such as sunspots and ionospheric disturbances. To do this it is necessary to have observers watching auroral displays all over the areas of the earth where the aurora appears and to have instruments recording the various colors and motions of the aurora from different points at the same time.

Comprehensive studies of these subjects not only tell us the nature of the upper atmosphere and the action of the bombarding particles, but also provide us with the knowledge needed to predict the amount and kind of disruptions which may be encountered in radio communications. While auroral disturbances to radio communications occur mostly in the polar and subpolar regions, it is in these frozen and desolate regions that maintenance of satisfactory communications is most important. The aurora causes many anomalous effects in radio propagation. For example, the density of ionization may get so large that very high frequency radio waves may be picked up at distances far beyond expectation. More important are the interfering effects of radio waves which cause messages to be unintelligible, or the absorption of radio waves which may be so great that no message gets through at all. Watching the aurora in the northern sky the ordinary observer may not realize that perhaps a pilot flying across the North Atlantic may be in serious trouble because of interference with the functioning of his radio set.

Systematic observations of the aurora will be made in both the Arctic and the Antarctic. A major effort to establish time correlations between the polar regions will be made during the IGY. If simultaneous occurrences can be shown, significant theoretical advances explaining the nature and origin of the incoming particles and the effect of the earth's magnetic field upon them may be achieved.

An "all sky" camera, which surveys the entire sky from horizon to horizon and takes motion pictures of the aurora as it appears and goes through its successive changes, has been developed. The camera will provide a complete and accurate record of what men find hard to describe in scientific terms. This record will be compared with that made by other cameras at other locations taking pictures of the same aurora, or by cameras located at the other side of the earth taking pictures of the companion aurora which scientists expect to find appearing at the opposite pole.

Detailed information on the energy spectrum of auroral particles and intensities in the infrared and ultraviolet light will be obtained with spectrographs and spectrometers. By recording the variations of light of specific colors, the auroral distribution in height and latitude, and the behavior of short-lived auroral displays, correlation studies can be made with geomagnetic, cosmic rays, and ionospheric disturbances.

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