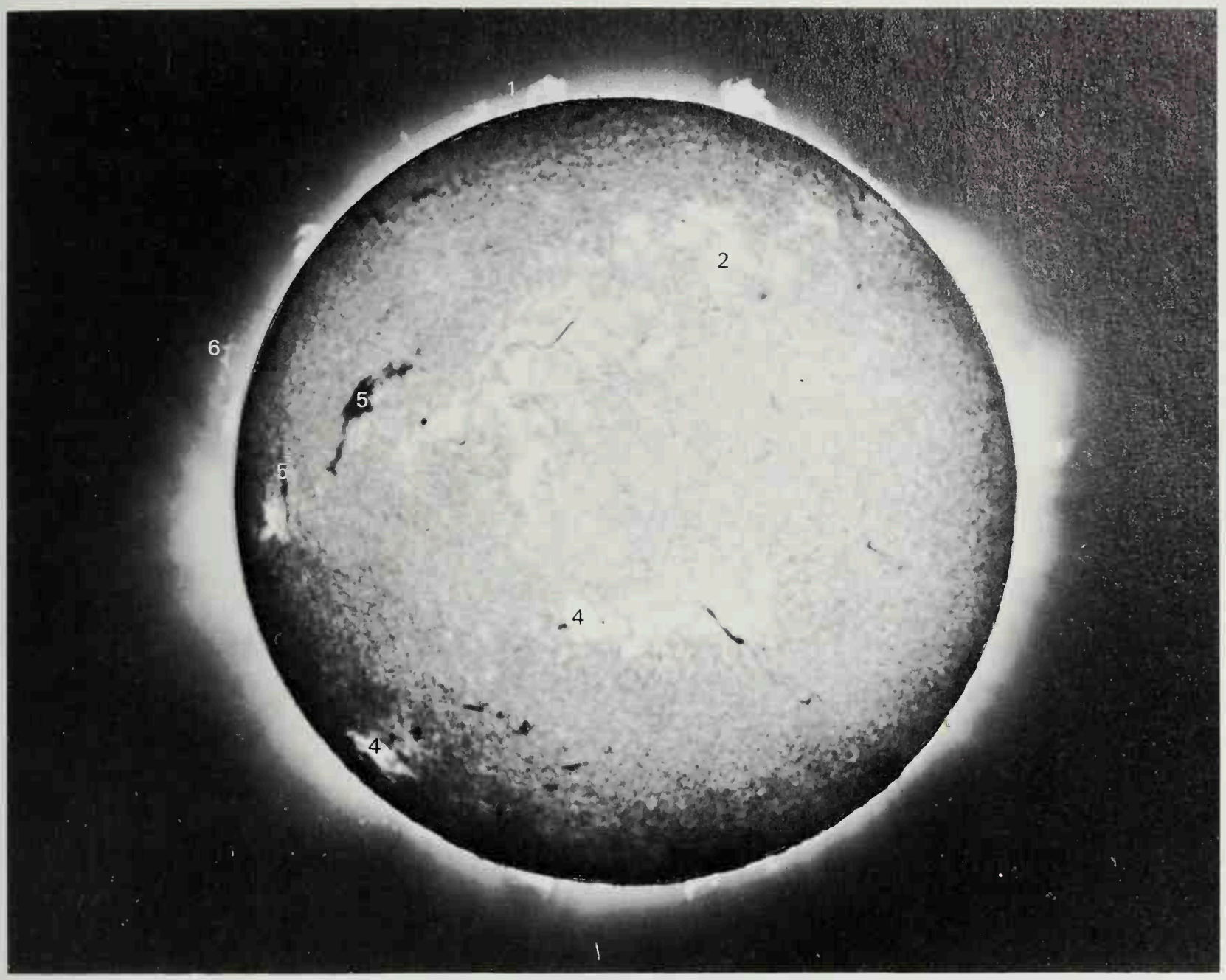

A composite photograph of the Sun with a white-light photograph of the corona and prominences superimposed on a filtergram of the disc taken in the light of a particular line of ionized hydrogen, Hα. Features marked are: quiescent prominence 1, plage 2, coronal plumes 3, sunspot groups 4, filaments 5, active prominence 6.

Sun. When thus observed it has a reddish colour, the emission of the dominant atomic element, hydrogen. (The reason we see the chromosphere in emission and not asborption is because the hotter photosphere is blocked off during an eclipse.) Thousands of emission lines are visible in a spectrum of the chromosphere recorded during an eclipse. In 1865, the element helium was first discovered there – indeed its very name derives from the Greek word *helios* meaning Sun. It was not until 30 years later that helium was isolated in the laboratory! Because total eclipses are very rare, special instruments have been developed for observing the outer solar atmosphere without waiting for an eclipse. These instruments do, however, need very good sites with a minimum of atmospheric scattering and are usually found at high altitude observatories. Of these the chief are the **coronagraph** and **spectroheliograph** which are narrow-band filter devices enabling the outer solar atmosphere to be studied in the light of one particular element. The most common and useful are the 656·3 nm Hα line and the 393·4 nm Ca line.

From such studies the chromosphere has been shown to have a very complex structure. Supergranular types of cells are observed along with networks of spikes resembling jets of flame and called **spicules**. These are temporary features with lifetimes of the order of minutes and extending from the base of the chromosphere to altitudes of 10 000 km. Even more spectacular are **prominences**, giant streamers of luminous gas extending well into the corona. Sometimes the prominences form loops and arches and are among the most spectacular of solar features. They are intricately connected with the Sun's strong magnetic field lines, as are all so-called 'active regions'.

As one moves outwards through the chromosphere the temperature rises until it reaches about 10^6 K where the chromosphere gradually merges into the corona. This is a region of extremely low density, which extends outwards for two or three solar radii until it blends into interplanetary space. Without specialized equipment, the corona, like the chromosphere, can only be seen during the brief few minutes of a total solar eclipse, but it is a spectacular sight. Glowing with a pearly coloured hue, its illumination is due mostly to sunlight from the photosphere being scattered by the free electrons of the highly ionized corona PLASMA. Observation of emission lines from very highly ionized elements there show that the coronal temperature exceeds 10^6 K. Recent data from ultraviolet spectrometers on board orbiting satellites