

FIRST LAND PLANTS FOUND ON EARTH

23rd September 400,000,000 BC

Our reporter details the dramatic events on earth that have enabled life to begin on land

A remarkable discovery was made today when the first land plants were seen on Earth. This has only come about due to the dramatic reduction in ultraviolet radiation we have seen on this planet during the last 4000 million years.

The story began in about 4500,000,000 BC when all the planets were formed. Each planet had a thick layer of gases – mainly hydrogen and nitrogen – surrounding it. This became known as the **primary atmosphere**. Intense solar activity caused the light gases to be removed from the atmosphere of planets nearest to the Sun. Meanwhile, the Earth itself was cooling down to a molten mass and a thin crust was forming.

The crust, however, was not stable. Volcanic activity pushed out huge quantities of gas through the crust. Among the

gases were ammonia, nitrogen, methane, carbon monoxide, carbon dioxide and a small amount of sulphur dioxide. All these gases began to form the **secondary atmosphere**.

Rain began to fall in approximately 3800 million BC when the earth had cooled to just below 100°C and water vapour in atmosphere condensed. The rain formed lakes and oceans on the now rapidly cooling earth and has created much of the surface of the Earth that we know today.

3000 million BC saw the first organisms appearing in the oceans. These bacteria were found at depths that would prevent them from the harmful ultraviolet rays of the sun but still allowed them to use the light to photosynthesise and make food.

The first organisms released oxygen molecules

(O₂) as a by-product. Fortunately **UV light** in the atmosphere was able to break down the molecules into individual atoms, e.g. $O_2(g) \rightarrow 2O(g)$. These highly reactive oxygen atoms combined with other oxygen molecules to form **ozone** (O₃). Ozone is a highly important gas in the atmosphere that prevents the harmful UV rays from reaching the ground and allowing the first land plants to appear.

What now for Earth? It is expected that the first land plants will increase the amount of oxygen and ozone in the atmosphere. There have been some suggestions that organisms will develop that can use the oxygen to survive – but we will have to wait and see.