

ASTRONOMICAL SOCIETY OF TASMANIA

BULLETIN 169

JULY, 1956.

Patron: His Excellency the Governor,
Rt. Hon. Sir Ronald Cross, Bart., K.C.V.O.,
President: Mr. J. L. Hull, F.R.A.S.,
Treasurer and Mr. C. E. Bisdee, Room 301, CML. Building,
Editor: 18 Elizabeth Street, Hobart. 'Phone B5277.

NEXT MEETING

Monday, 30th July, 7.45 p.m. in Adult
Education Rooms at 85 Elizabeth Street,
(first floor), Next door to new
Commonwealth Bank Building.

*Hope you
can turn up
Chadburn*

Subject: "Items of Astronomical Interest".
Members are requested to bring along items of Astronomical
interest which they would like to discuss before our Society.

REPORT OF MEETING ON 26.6.56:

At this meeting members heard an interesting talk by Dr. Grote Reber on
Radio Astronomy and his experiences in this field on his recent trip to the
U.S.A., England and Europe.

Incidentally, Dr. Reber will soon be carrying out further researches in this
work at Kempton where he is now erecting his equipment.

AURORAL REPORTS:

With the increase in Auroral activity from the increasing intensity of the
sunspot cycle and the coming International Geophysical Year The Carter Observatory,
Wellington, New Zealand, would be pleased to receive auroral reports direct from
our members.

The Tasmanian reports combined with reports from other parts and New Zealand
gives a knowledge of the extent of the phenomenon Those members who are willing
to carry out this work should direct their reports to The Director of the above
Observatory, in N.Z.

A manual has been published for visual observations of the aurora by the
Carter Observatory and those members requiring a copy should contact the Secretary.
Mr. C. E. Bisdee.

In making out these reports the observer should follow the following method
closely:

1. Record Latitude and Longitude to nearest degree. of your position.
2. E.S. Time of commencement and end.
3. Date.
4. Direction of display.
5. Type, Rays, Areas, Curtains, Cloud etc.
6. Colour.
7. Approx. altitude.
8. Times of any appreciable changes.
9. Remarks.

Reports should be as brief as possible and to the point, and if possible,
incorporate all the above steps.

CAUSE OF "THE ICE AGES":

Following on from Dr. Caster's lecture before our Society recently on the
"Ice Ages" mention was made as to the most likely cause of visitations of continental
glaciation. Dr. Caster said most geologists consider the amount of water vapour
and carbon dioxide in our atmosphere played a leading part. In the science section
of Time Mag., May 28-1956, Director Roger Revelle of the Scripps Institute of
Oceanograph thinks that in about 50 years owing to the vast amount of carbon dioxide
we are putting into our atmosphere from the burning of wood, fuel oil etc. owing to
our great industrial era, our climate may get much warmer.

Dr. Revelle says:

"The temperature of the earth's surface depends largely on two minor constituents of the atmosphere: water vapor and carbon dioxide. They are transparent to the short-wave energy (light and near infra-red) that comes from the sun, but opaque to most of the long-wave heat radiation that tries to return to space. This "greenhouse effect" traps heat and makes the earth's surface considerably warmer than it would be if the atmosphere had no water vapor or carbon dioxide in it. An increase in either constituent would make it warmer still. Warm eras in the geological past may have been caused by CO₂ from volcanoes.

At present the atmosphere contains 2.35 trillion tons of carbon dioxide, existing in equilibrium with living plants and sea water (which tends to dissolve it). Up to 1860, man's fires added only about 500 million tons per year, and the atmosphere had no trouble in getting rid of this small amount. But each year more furnaces and engines poured CO₂ into the atmosphere. In 1900, the amount was 3 billion tons. By 1950, it was 9 billion tons. By 2010, if present trends continue, 47 billion tons of carbon dioxide will enter the air each year.

This will be only 2% of the total carbon dioxide, but if it is more than can be dissolved by the oceans or absorbed by plants or minerals, the concentration of CO₂ in the atmosphere will tend to increase. The greenhouse effect will be intensified. Some scientists believe that this is the cause of recent warming of the earth's climate. Dr. Revelle has his doubts.

In the future, if the blanket of CO₂ produces a temperature rise of only one or two degrees, a chain of secondary effects may come into play. As the air gets warmer, sea water will get warmer too, and CO₂ dissolved in it will return to the atmosphere. More water will evaporate from the warm ocean, and this will increase the greenhouse effect of the CO₂. Each effect will reinforce the other, possibly raising the temperature enough to melt the icecaps of Antarctica and Greenland, which would flood the earth's coastal lands.

Dr. Revelle has not reached the stage of warning against this catastrophe, but he and other geophysicists intend to keep watching and recording. During the International Geophysical Year (1957-59), teams of scientists will take inventory of the earth's CO₂ and observe how it shifts between air and sea. They will try to find out whether the CO₂ blanket has been growing thicker, and what the effect has been. When all their data has been studied, they may be able to predict whether man's factory chimneys and auto exhausts will eventually cause salt water to flow in the streets of New York and London.

NEW THEORY ON CAUSE OF ICE AGES:

Two American geologists, Ewing and Donn, have developed quite a new theory on the causes of the ice ages. (Time Mag. July 9, 1956.)

Their theory requires no cause external to the earth and no change in atmosphere.

Briefly their theory is based on the assumption that the earth's seas in the more temperate regions will deposit snow in the polar regions forming glaciers. These glaciers will migrate to lower latitudes from the poles, but they eventually will stop growing after a few thousand years, due to the fact that they will lock up so much of the ocean's water that sea level all over the world would fall. Water movement between the polar regions and the more temperate regions would be reduced, so that less warm water would flow towards the poles. Deprived of warmth the polar regions would freeze over. Then the great continental glaciers deprived of snow fall, would waste slowly away restoring water to the oceans. Then the level of the sea would rise. Warm temperate region water would flow freely into the polar regions melting its surface ice. Snow would increase on the northern and southern land areas. The continental glaciers would start growing again and so commence the start of another cycle.

This glacial cycle is very like a slow responding thermostat that keeps the earth alternating between glacial and interglacial periods.

The above scientists support their theory by citing cores of ocean-bottom mud that indicates warming of the Atlantic surface water about 11000 years ago. This they think was when the last ice age lowered sea level so much that the Arctic Ocean cut off from the Atlantic, froze over. The glaciers then at maximum began to retreat.

If the above theory is correct we can expect an ice age in a few thousand years because at present there is warm water flowing towards the Arctic at a steadily increasing amount and when the Arctic Ocean melts the glaciers will feed with snow will start creeping south again.