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A PROPOSAL FOR RENAMING THE SOLAR CIRCLES

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The complexity of physical, social and political ideas of to-day is taxing the human intellect almost to the breaking point. For this reason it is well to take an inventory at this time of our intellectual stores to ascertain what is of value and what should be discarded.

Inherited mistakes, when recognized, are difficult to correct owing to our mental slothfulness. English orthography is a classic example. But there are many other inherited, useless, mental burdens which we should be ashamed to pass on to the next generation.

Geography bears its share of this rubbish. Those who believe in the educative value of geography should aid in clearing the subject of this valueless material. The tropics offer a good place to begin house cleaning. For some reason the terms, Tropic of Cancer and Tropic of Capricorn, are easily confused even by the adult mind. This confusion may result from the fact that both words begin with "Ca." But whatever the cause, even teachers and college students find difficulty in distinguishing between them. From 90% to 100% of college students, in eight different classes, recently questioned, expressed difficulty in remembering which was the Tropic of Cancer and which the Tropic of Capricorn.

Several thousand years ago observing people discovered that the sun came a certain distance north, appeared to stand for a time, then turned and went south. The turning place or tropic was then in the part of the heavens where the constellation of Cancer was seen. Six months later when the sun reached the south turning point it was in the region of the constellation of Capricorn.

Owing to the precession of the equinoxes, the solstices have not occurred in the "House of Cancer" and in the "House of Capricorn" for nearly 2000 years and will not occur there again for about 23,000 years. At the present time the summer solstice occurs in Gemini

Distribution of Moonlight During Metonic Lunar Cycle (About 19 Years - 1904 to 1923)

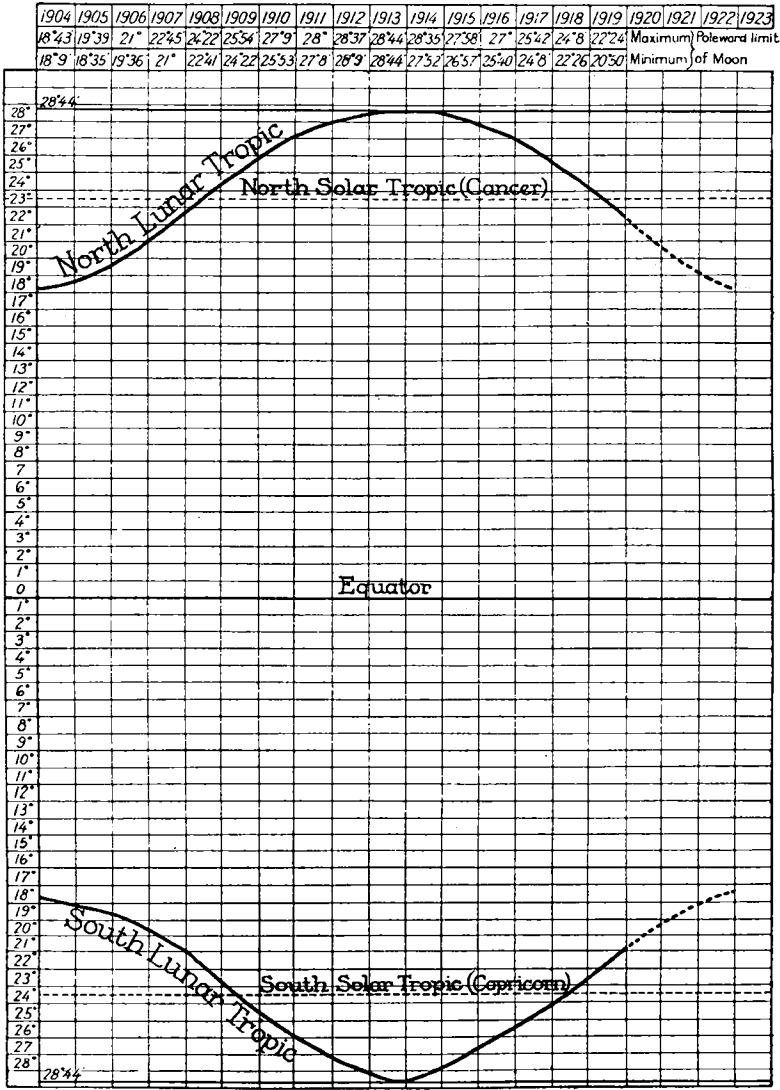


FIG. 1. DISTRIBUTION OF MOONLIGHT DURING METONIC LUNAR CYCLE

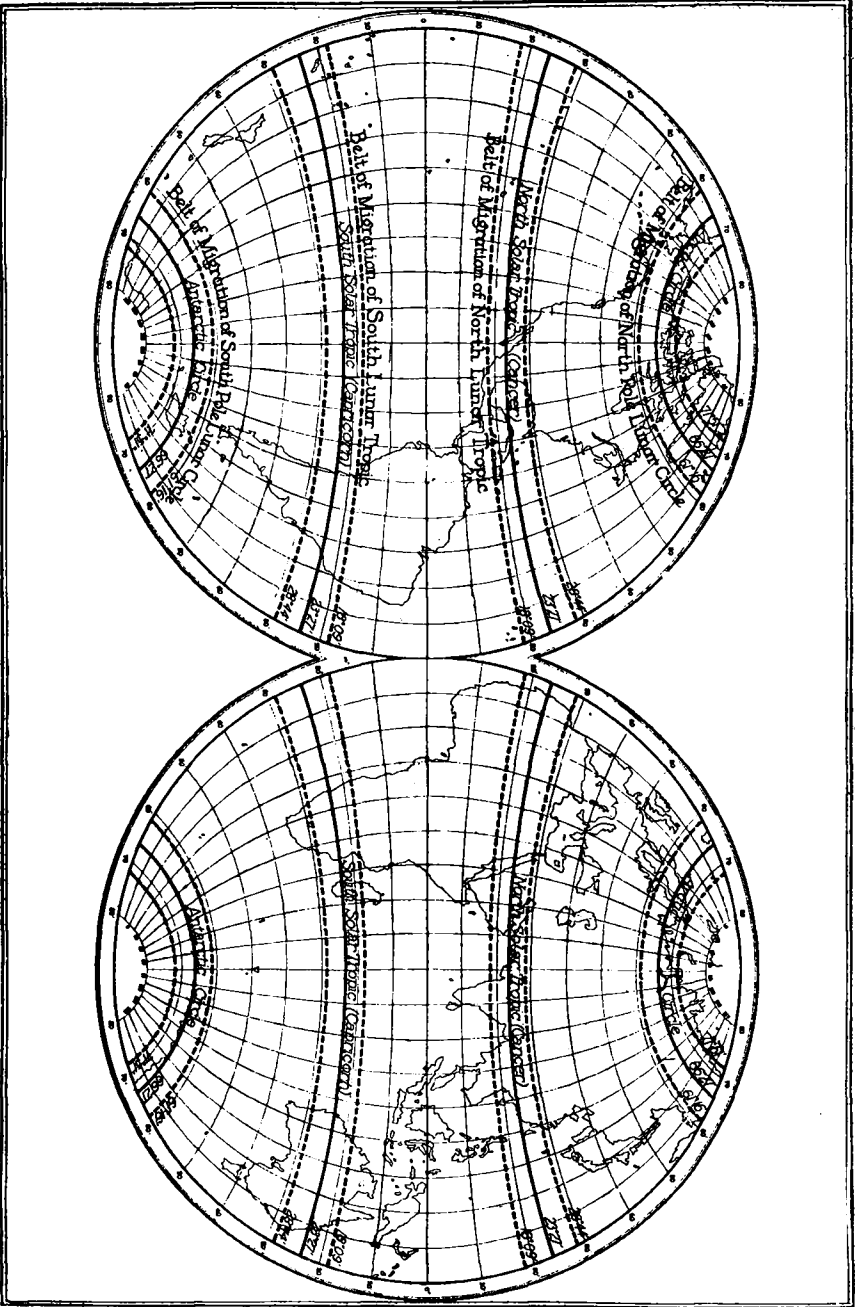


FIG. 2. MAP OF WORLD SHOWING THE MIGRATION BELTS OF THE LUNAR CIRCLES

and the winter solstice in Sagittarius. It is burdensome and useless to try to relate the tropics to the constellations. Memory is often made to pay too dearly for devotion to history! The names borne by the sun's tropics should be terms that are appropriate for all time, and that are free from any thing that may lead to confusion. The designation, North Solar Tropic and South Solar Tropic, fulfills these conditions.

The Arctic and Antarctic Circles are also confusing to the learner, as the names do not indicate which one is north and which one south. North and South Pole Solar Circles would be more appropriate. Perhaps the continued use of the terms Arctic and Antarctic can be justified because the former is associated with the Arctic Ocean and the latter with the Antarctic Continent. It is clear, however, that these terms bear no relation to the reason for the existence of such Circles and hence are not scientifically sound.

This suggestion for renaming the solar circles is the outgrowth of meeting again and again what seems to be an easily avoidable confusion in getting a firm grasp of the fundamentals of the dominant geographic control—the distribution of light and heat.

To ascertain the distribution of moonlight over the earth it was necessary to plot the lunar tropics. The difficulty in delineating these lines lay in the fact that the moon does not turn on the same north and south parallels as it makes its journey twice a month across the lunar "Torrid Zone." During the Metonic cycle, of about 19 years, the moon's turning points vary from latitude $18^{\circ}9'$ north and south, to latitude $28^{\circ}44'$ north and south. (Fig. 1.) In the year 1904 of the present lunar cycle, the moon turned at latitude $18^{\circ}9'$ north and south making a zone that saw the moon in the zenith of about $36^{\circ}18'$. This zone increased in width from 1904 until 1913 when it reached a breadth of $57^{\circ}28'$. After reaching the greatest extension of the moon's vertical rays, the lunar tropics moved equator-ward. This movement will continue until about 1923 when the pole-ward movement will again begin. At the present time (Oct. 1920) the moon is not seen in the zenith north of latitude $+19^{\circ}29'$ nor south of latitude $-19^{\circ}21'$.

As soon as the moon's tropics were drawn (Fig. 1) it was apparent that they would have to be christened. I suggested the names, North Lunar Tropic and South Lunar Tropic to Professor Forest Ray Moulton for his criticism and received his cordial approval.

The migration of the North Lunar Tropic and of the South Lunar Tropic, each passing over a belt of about $10\frac{1}{2}^{\circ}$ of latitude, is shown on a map of the world (Fig. 2).

The North Pole Lunar Circle and the South Pole Lunar Circle move over zones of similar breadth. In 1904 the polar areas that had the moon above the horizon for twenty-four, or more hours, were bounded by latitude $71^{\circ}51'$ north and south. And in 1913 latitudes $61^{\circ}16'$ north and south had moonlight for twenty-four continuous hours.

The use of the adjectives, north and south, to designate the solar and lunar tropics and the polar circles has been discussed with many university classes of teachers and has received unanimous approval. Unless more appropriate names are found, it is hoped, for the sake of present and future students, that these terms may be accepted.