2B

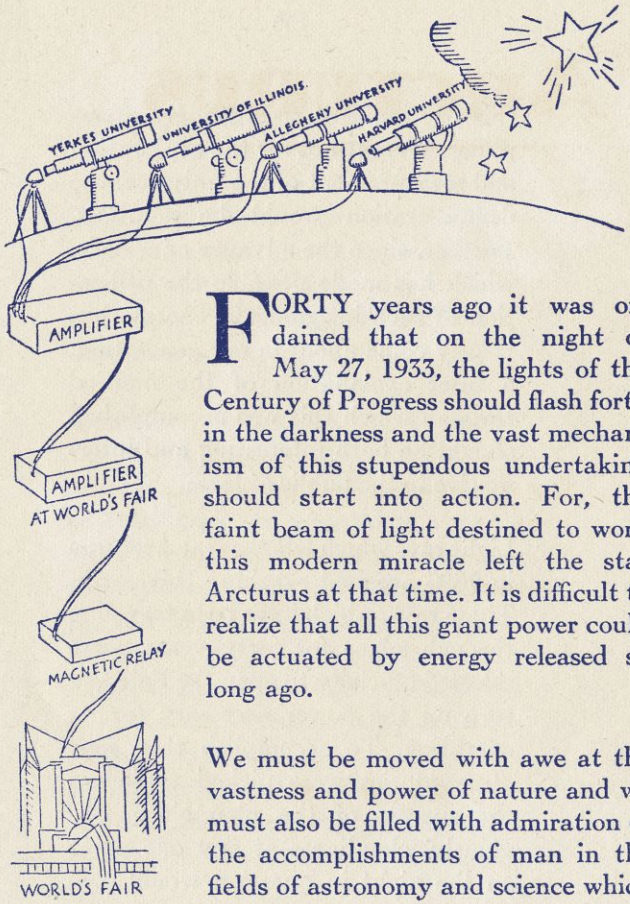
ARCTURUS

ARCTURUS

Star of resplendent front, thy glorious eye
Shines on me still from out yon clouded sky.

WHITMAN

★ ★ ★



FORTY years ago it was ordained that on the night of May 27, 1933, the lights of the Century of Progress should flash forth in the darkness and the vast mechanism of this stupendous undertaking should start into action. For, the faint beam of light destined to work this modern miracle left the star Arcturus at that time. It is difficult to realize that all this giant power could be actuated by energy released so long ago.

We must be moved with awe at the vastness and power of nature and we must also be filled with admiration of the accomplishments of man in the fields of astronomy and science which

this one incident so strikingly exemplifies. Were it not for the exploration and measurement of the universe, the demonstration would be pointless. Further, since the advance of science, which has made possible the utilization of such insignificant energy, has largely come about in our generation, a brief explanation of the method through which this was accomplished should be both interesting and informative to the public at large.

Light rays which left the star Arcturus in 1893 are just reaching this earth. These rays, which have been traveling through space for forty years, were selected officially to open the Fair and turn on the power necessary for its operation. To accomplish this, four observatories were picked to insure the success of the plan since, obviously, cloudiness at any one point on the night in question would pre-

vent seeing the star. It is for this reason that observatories entrusted with this operation are located at Cambridge, Mass. (Harvard University), Meadville, Pa. (Allegheny University), Urbana (University of Illinois), and Williams Bay, Wis. (Yerkes Observatory).

To utilize this starlight for the opening of the Fair it was necessary to devise a plan by which the light might be transferred into electrical energy for the operation of a switch. In accomplishing this transformation, the star Arcturus is tracked through the heavens by 28-inch refractor telescopes so that all of the available light from the star is concentrated at what would correspond to the eye-piece. Instead of this light falling upon the retina of the human eye, it is focused upon a photo-electric cell or electric eye.

The photo-electric cell or electric eye produces and controls the flow of electrical energy according to the amount of light which falls upon it.

The electrical energy thus set up, although very faint, is amplified into greater current, just as a radio signal is amplified in a radio set. This current is then sent over wires to the Exposition at Chicago where it is further amplified and used to operate electrical switches.

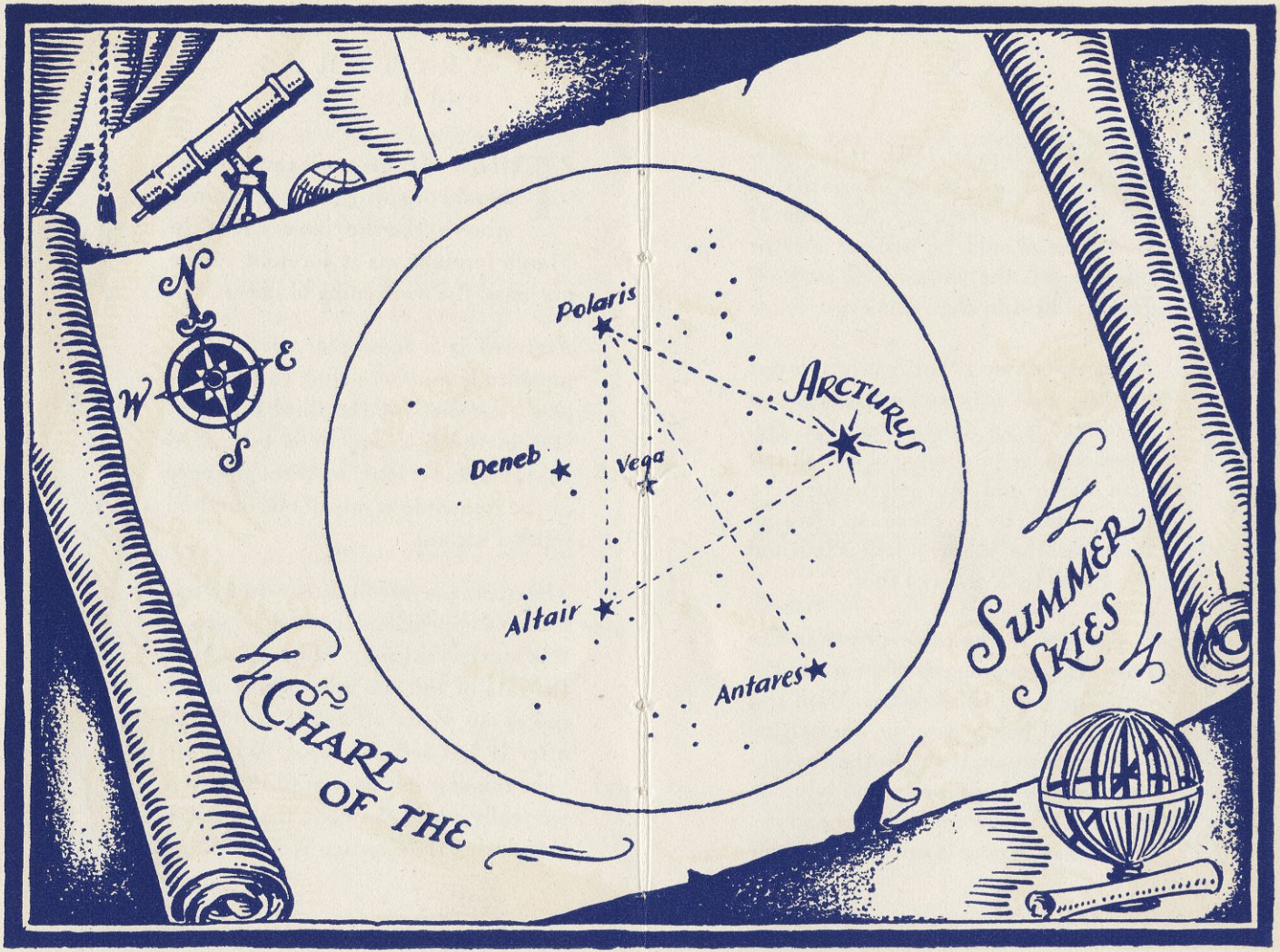
While this operation would appear to be complicated, it requires but a fraction of a second. In less time than it takes to tell, the light received at the observatory is transmitted to Chicago and the Fair is open!

ARCTURUS
and Its Myths

THE star Arcturus is the celestial herald of spring. Its appearance above the horizon early in March foretells, as it foretold to the ancients, the awakening of nature.

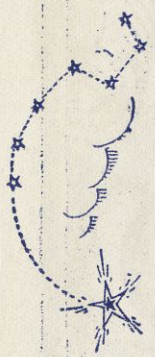
Arcturus is a fixed star of the first magnitude and according to the *Harvard Photometry* is the third brightest star in the heavens. It is estimated that this star is hurtling through space at the tremendous rate of one hundred miles a second.

The distance of Arcturus from our Earth is approximately 40 light years; this means that light which travels at the rate of 186,000 miles a second requires 40 years to reach our Earth after it has left Arcturus. When we view this star in this year of 1933 what we really see is the light that left the star during the Chicago World Colum-


N
W
E
S
Polaris
Arcturus
Deneb
Vega
Altair
Antares
A Chart of the
Summer Skies

bian Exposition in 1893. It is therefore most fitting and appropriate that the rays sent forth by Arcturus at that time should be utilized for the opening of the current *Century of Progress* held in the same city.

Authorities assert that Arcturus is one hundred and fifty times as bright as our Sun. As an illustration of its tremendous size in comparison with our own Earth and Sun let Arcturus be represented by a globe six feet in diameter, the Sun by a tennis ball and the Earth by a grain of shot.



A chart of the summer evening skies on a July evening is shown on the center-piece of this booklet. With this chart held before you, in the natural reading position, it shows the heavens as they would appear to you lying on your back, with your feet to the south. The Great Dipper is up north, at your

right, the handle extending to the south. Follow the curve of the handle, for about twice its length and you will locate a star predominating in brightness. This is Arcturus, which is at the lower end of the kite-shaped constellation, Boötes.

Astronomy is probably the oldest of sciences and the ancients, in their endeavor to gain a conception of immortality, observed the immutability of the heavens and so enthroned their Gods and immortals as stars in the firmament. And, as these early astronomers, astrologers and simple shepherds watched the course of the stars across the sky with the awe of viewing their Gods, the constellations took on forms significant of the deeds or occupations of the immortals concerned.

XII

Since Arcturus is the herald of spring, it was a sign for the plowman to begin his activities and it was natural that Boötes after whom its constellation is named, be credited with the invention of the plow. In this legend the Great Bear, or Big Dipper, is interpreted as a primitive plow and Boötes as a plowman since the latter constellation endlessly tracks the Big Dipper through the heavens.

This particular myth relates how Boötes, having been robbed of his earthly possessions by his brother, and being of an industrious nature, tilled the soil from early dawn until dusk. At night he would sit in the starlight and dream of an implement more suited to breaking the soil than his primitive hoe. As the result of his dreams, he invented the plow, and with the aid of two oxen, quickly regained his lost fortune.

XIII

Of this Manilius writes as follows:

" . . . whose order'd beams
Present a figure driving on his teams,
Below his girdle, near his knees, he bears
The bright Arcturus, fairest of the stars."

Greek mythology, however, was responsible for the name Arcturus, which translated, means Guardian of the Bear; the Bear being Ursa Major, or the Big Dipper. This myth tells how Callisto, an Arcadian maiden, was an attendant upon Artemis (better known as Diana) goddess of the chase and chaste, and with her hunted the wild beasts of Arcadia.

Zeus, the king of the Gods, became enamored of Callisto and because of her deflection from the vows of Diana, she was changed by that Goddess into the Great Bear. Enraged at the punishment dealt out by Diana, Zeus retaliated by placing Arcturus in the heavens as a guardian of the Bear to protect her from Diana. As a consequence, among the Greeks, Arcturus takes on the form of the constellation Boötes and is shown with the hunter's spear in one hand and, with the other, holding the leash of the hunting dogs, forever following his charge.

By the ancient Egyptians and Syrians, Arcturus was regarded as the Keeper of the Heavens and many huge and costly temples were erected in his honor and commemoration.

Among moderns, Arcturus is frequently alluded to as Job's Star as it is

mentioned in the Book of Job, (ch 38-32).

Returning from the mythology of the ancients to the modern conception of the constellation of Boötes, dominated by this beautiful golden star Arcturus, one learns that Arcturus rises early in March and reaches the meridian on June 8th, about 9 o'clock p.m. Then its eager, splintering light is calmed to a steady glow like a golden lamp above the world. From July until December the splendid star floats lower and lower through the western part of the heavens until it touches the horizon in the northwest and disappears.