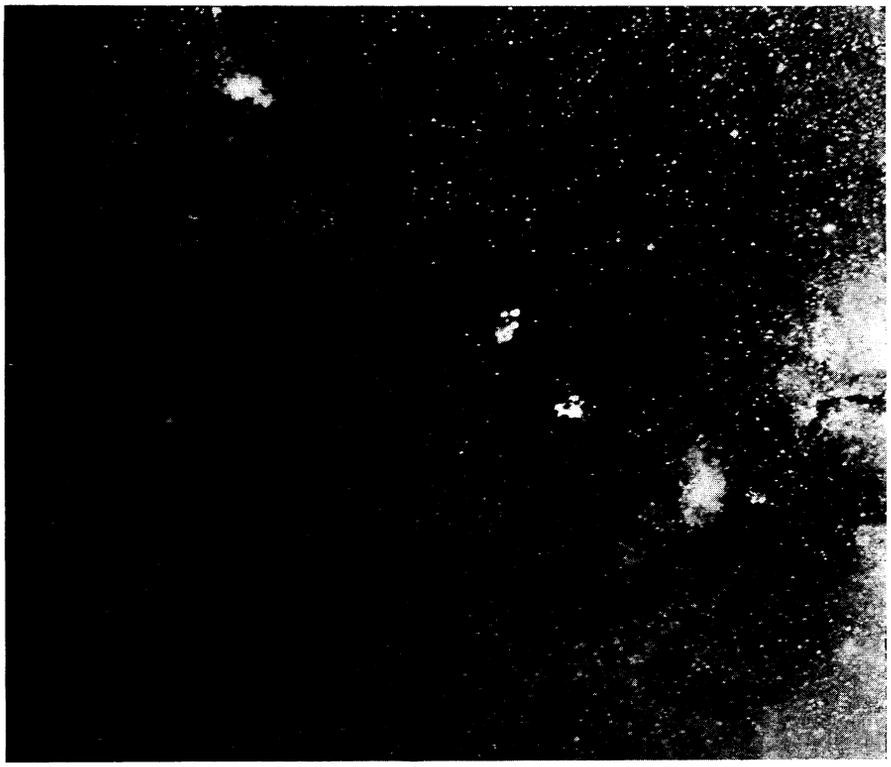

SPIRAL ARMS—Several regions of bright hydrogen gas, marking the location of the spiral arms of our Milky Way galaxy, show up in this photograph made at the Boyden Station of the Harvard Observatory. They extend in almost a straight line diagonally from upper left to lower right.

ASTRONOMY

Spot Our Galaxy's Arms

Bits of the spiral arms that trail our galaxy have been glimpsed in the southern portion of the Milky Way. Bright hydrogen gas was used as the direction signpost.

➤ PEERING BEYOND the myriads of stars that surround our solar system with its fiery sun, astronomers are beginning to discover what the pinwheel galaxy to which our earth belongs looks like.

At last they are glimpsing bits of the spiral arms that trail our Milky Way galaxy of stars, shining nebulae and bright gases as this gigantic merry-go-round swings through space.

Sections of the spiral arms that extend out from our watch-shaped system have been spotted in the southern portion of the Milky Way, Dr. Bart J. Bok, Michiel J. Bester and Campbell M. Wade, all of Harvard College Observatory, told the American Astronomical Society in Amherst, Mass.

In the northern part of the Milky Way, that portion seen from the United States and Europe, the existence of two sections of spiral arms was announced only a year or so ago by Dr. W. W. Morgan, Stewart Sharpless and Donald Osterbrock of Yerkes Observatory.

Bright hydrogen gas was used as a signpost to show the direction of the spiral arms in both the northern and southern portions of the Milky Way. As this hydrogen gas has been found to be an outstanding indicator of spiral structure in other spiral galaxies, such as the Great Nebula of Andromeda which we can see out in space, the spiral arms of our own galaxy can probably best be traced through these patches of glowing gas.

Photographs taken at Harvard's Boyden Station in Bloemfontein, South Africa, show that the bright regions follow very closely along the equator of the Milky Way as it stretches across the southern sky.

No areas of glowing hydrogen gas were found more than four degrees from the central band of the Milky Way.

The bright regions, however, are not always seen projected against the brightest parts of the visible band of the Milky Way. Occasional dark patches of gas between us and the Milky Way blot them from view.

While there is evidence of considerable inner spiral structure, it is still too early to state exactly how the inner spiral arms are located, Dr. Bok said. We probably see at least two sections of inner spiral arms with a clear gap in between them.

The exact nature of these arms and their precise orientation, however, will not be known until further spectral and photoelectric studies have been made to determine the intrinsic brightness and distances of the blue-white supergiant stars that excite these nebulosities. Such studies are now under way at the Boyden Station.

The section investigated by the Harvard astronomers lies between the Southern Coal Sack and the Scutum Cloud, well-known objects in the southern sky. An adjacent section of the Milky Way is now being photographed to see if additional portions of the spiral arms can be detected.

Hydrogen gas was found to glow brightly in that portion of the Milky Way between galactic longitudes 250 degrees and 265 degrees, in the southern constellations of Carina, the ship's keel; Crux, the southern cross; and Centaurus, the centaur. Patches of bright hydrogen likewise are strong and abundant between longitudes 300 degrees and 345 degrees, Dr. Bok stated. Here 16 certain regions of bright gas and ten additional probable areas were found.

Little evidence of spiral structure, however, was found in the Milky Way between longitudes 265 degrees and 300 degrees.

Science News Letter, January 10, 1953

PHYSIOLOGY

Proper Muscle Control Can Prevent Heart Ills

➤ COMMON FORMS of high blood pressure, stomach ulcer, neuroses and even coronary heart disease can be prevented if people can learn to control their own body machinery as well as the motorist can control the horsepower under the hood of his car.

This prediction was made to the American Association for the Advancement of Science meeting in St. Louis by Dr. Edmund Jacobson of the Laboratory for Clinical Physiology, Chicago, author of a book on "Progressive Relaxation."

Mental operations are not conducted exclusively in the brain and other parts of the nervous system as has been thought, Dr. Jacobson said. Certain muscles are tensed in imagination. In anxiety, others are tensed. Relaxation of the specific muscles involved will serve to reduce the imagination or the anxiety.

But, if you let your muscles become tensed without control, this can produce not only spasms of the muscles of the digestive apparatus or of the blood vessels, but also mental states like anxiety or fear, Dr. Jacobson said.

By learning where the controls are to put the brakes on your muscles, he explained, you can learn to run yourself more effectively with less wear and tear.

Science News Letter, January 10, 1953

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