

Astronomers find space molecule

Canadian astronomers using a radio telescope have found the longest and heaviest molecule in the emissions of a cool, carbon star called *CW Leo*, 630 light years away, reports Estelle Dorais of the *Canadian Press*.

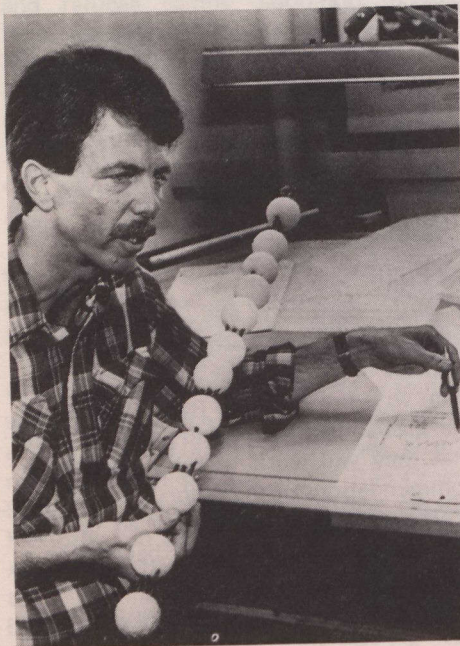
The discovery of the HC11N, 11 carbons and one nitrogen — was made by a group of astronomers from the National Research Council of Canada's Herzberg Astrophysics Institute.

The long carbon molecule, called Cyano-decapentayne, is made of the same chemicals as the amino acids — the protein building blocks in human bodies. The average molecular weight of the 20 amino acids is 137 and HC11N's weight is 147.

The discovery, made at the Haystack Observatory in Westford, Massachusetts, is the fourth detection of heavy, complex molecules made by Herzberg astronomers. Astronomers from other institutes have not been able to detect them.

The other discoveries — HC5N, HC7N and HC9N — were made at the research council's Algonquin radio telescope in Algonquin National Park in Ontario. The team, headed by Morley Bell, went to Haystack this time because reception there was better.

Sun Kwok, another team member, said that 15 years ago astronomers did not believe there could be any molecules in space. Such molecules are manufactured and ejected by dying stars.



Morley Bell holds a mock-up of the newly-discovered molecule.

Agriculture exports rise

Agricultural exports increased in 1980 to a record \$7.8 billion, up from \$6.1 billion the previous year, Agriculture Canada economists report.

Agricultural imports over the same period rose only moderately, from \$4.7 billion in 1979 to \$5.1 billion in 1980.

This gave Canada an agricultural trade surplus for 1980 of \$2.7 billion, up by about 90 per cent from the 1979 surplus of \$1.4 billion.

When "food" exports, including fish and alcoholic beverages, are added, total agriculture and food exports for 1980 amounted to \$9.5 billion. Food imports were valued at \$5.8 billion, resulting in a surplus in agriculture and food trade of \$3.7 billion. That represents more than two-thirds of Canada's total 1980 trade surplus.

Agriculture and food exports last year accounted for 12.9 per cent of total Canadian exports of \$73.8 billion. Agriculture and food imports represented 8.4 per cent of total Canadian imports in 1980.

Housing company sells abroad

A Quebec company that recently began manufacturing prefabricated houses has orders for all its potential production through to next February and is exporting to Africa, New Zealand and Bulgaria.

The prefabricated house, manufactured by Les Systemes Archimede Incorporated of Tring Junction (Beauce) Quebec, is easy to assemble. It is made up of 30 panels jointed together with a total of 40 bolts and can be erected in a day by two unskilled people using a box wrench. The Archimede house has also been designed to be moved. Two people can dismantle it in about half a day.

The house is designed in the form of a cluster of three hexagons, each of which is erected on a single concrete pier. The eight-foot by eight-foot panels are made of pressure-injected, self-extinguishing polyurethane foam framed in welded steel clad on the outside with prepainted aluminum or textured plywood and on the inside with woodgrain panelling or drywall.

Advisers available

Once the walls, floor and roof of the house are assembled, the cracks between the panels are sealed with a foam and

then outside corners and mouldings are snapped on. This is the only operation that requires any skill at all and the franchised contractors who sell or erect the Archimede house make available the services of technical advisers for on-site assistance at \$20 an hour.

According to tests conducted by the company, the house can be heated and its lights and refrigerator electrically powered for \$150 a year. The polyurethane panels provide insulation values of R28 in the walls and R36 in the roof and an electric furnace heats air and forces it into the 800-cubic-foot cavity between the floor and the base of the house. The heated air rises through small holes around the inside perimeter of the house and a hydrostat draws fresh air into the furnace plenum and automatically opens and closes louvers to maintain a pre-set humidity level in the house. The company is also developing for production next year, a solar system for heating the house.

Computer simulates earthquakes

The University of British Columbia in Vancouver has in its engineering laboratory a computer that can recreate earthquakes.

The computer replays sensitive ground recordings made during earthquakes and orders a three-metre by three-metre "shake table" to duplicate the shaking, rattling and rolling.

The shake table is used by the university's civil engineering department to study what happens to buildings, bridges, dams, pipelines, oil storage tanks and nuclear reactors when the earth moves. Scale models of these structures are placed on the table and researchers determine how much swaying and vibrating they can withstand.

The table is available for use by manufacturers, industrial organizations, public utilities and regulatory agencies who want to establish whether various structures meet current earthquake standards and whether those standards should be tightened.

The table can rattle up to a magnitude of eight on the Richter scale, which measures the amplitude of earth shock waves. A reading of 4.5 or five outside the laboratory is usually strong enough to cause damage. A reading of six, which is ten times stronger, often cracks plaster and a reading of seven can cause widespread, heavy damage.