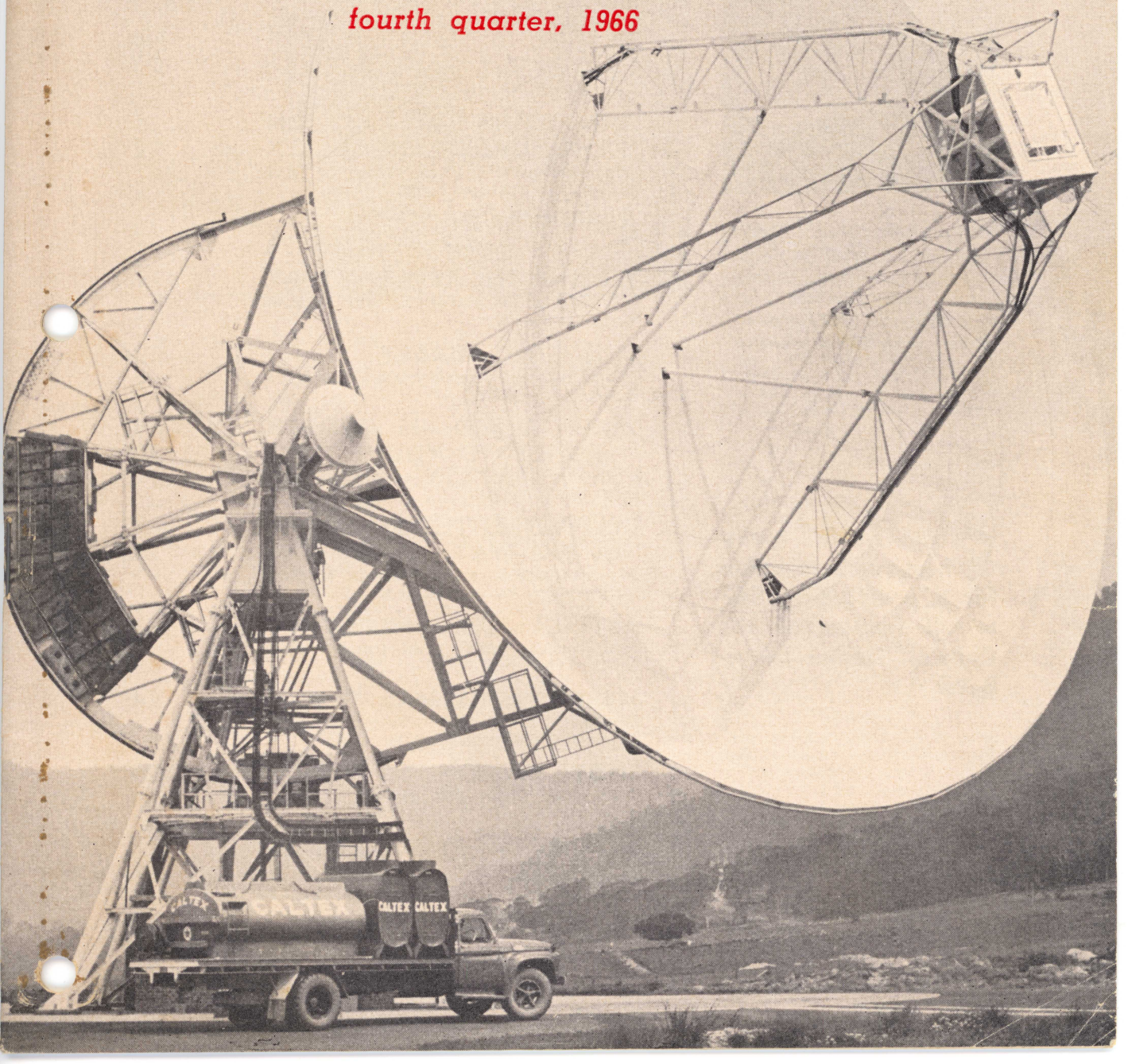
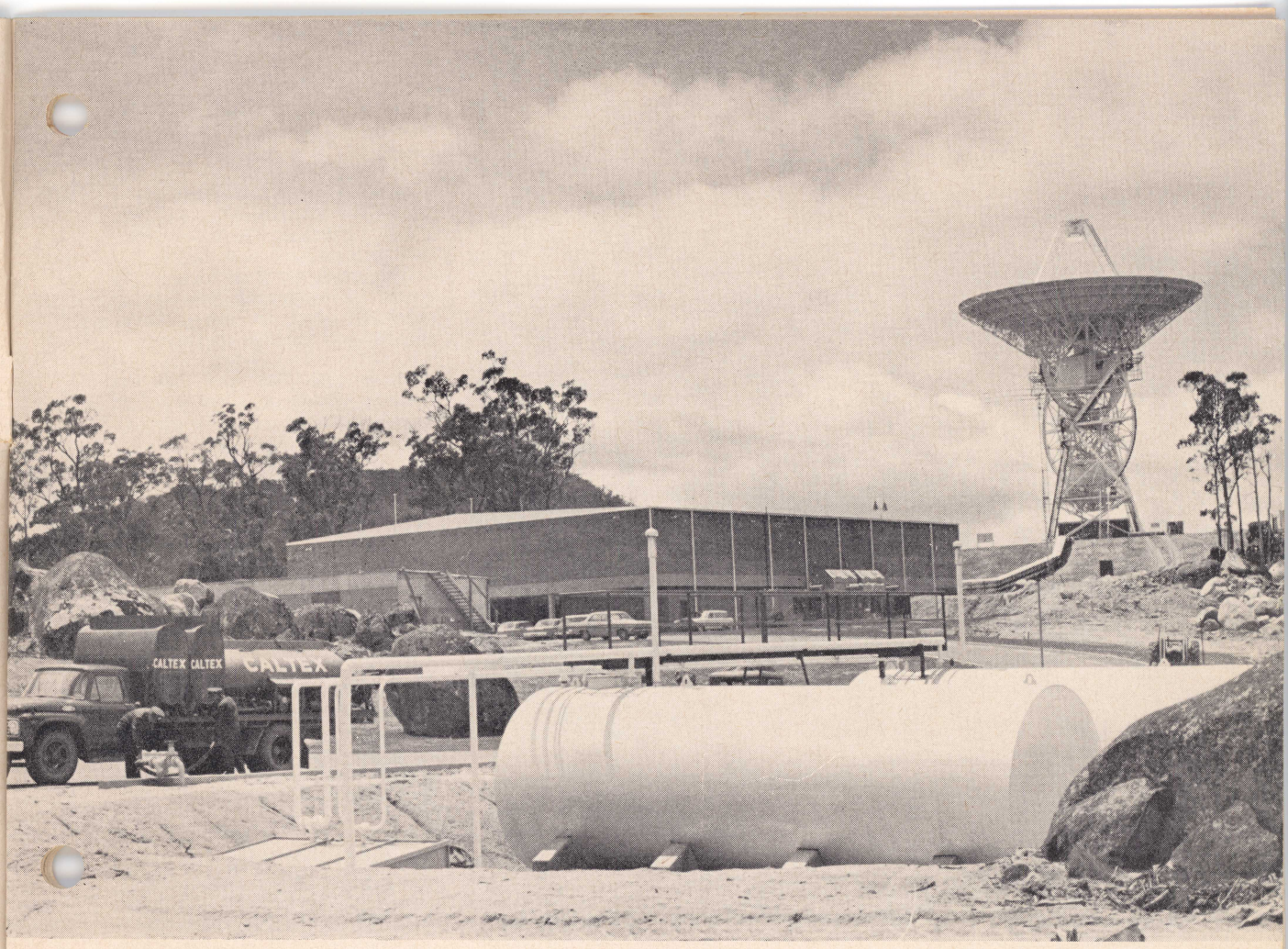
THE CALTEX DEALER AND DISTRIBUTOR

fourth quarter, 1966





Distributor Val Jeffery and his driver Rex Eades deliver product to the Honeysuckle Creek facility. The parabolic antenna is in the "park" position.

A JOB OUT OF THIS WORLD

TEN miles south of Canberra on the Monaro Highway, the signpost points to Tharwa. The bitumen gives way to patches of gravel and winds through lush grazing country. Cattle graze and sheep are chest high in the green sward which sweeps westward to the mountain range.

The road sweeps past the Lanyon property—now famous as the scene of the barbecue for L.B.J. — and heads towards a row of poplar trees marking the bank of the Murrumbidgee River with its bridge and cluster of houses which shelter the 51 residents of the village of Tharwa.

Tharwa has a post office, a school, a store, two gasoline pumps (both Caltex) and a Caltex distributor — Val Jeffery.

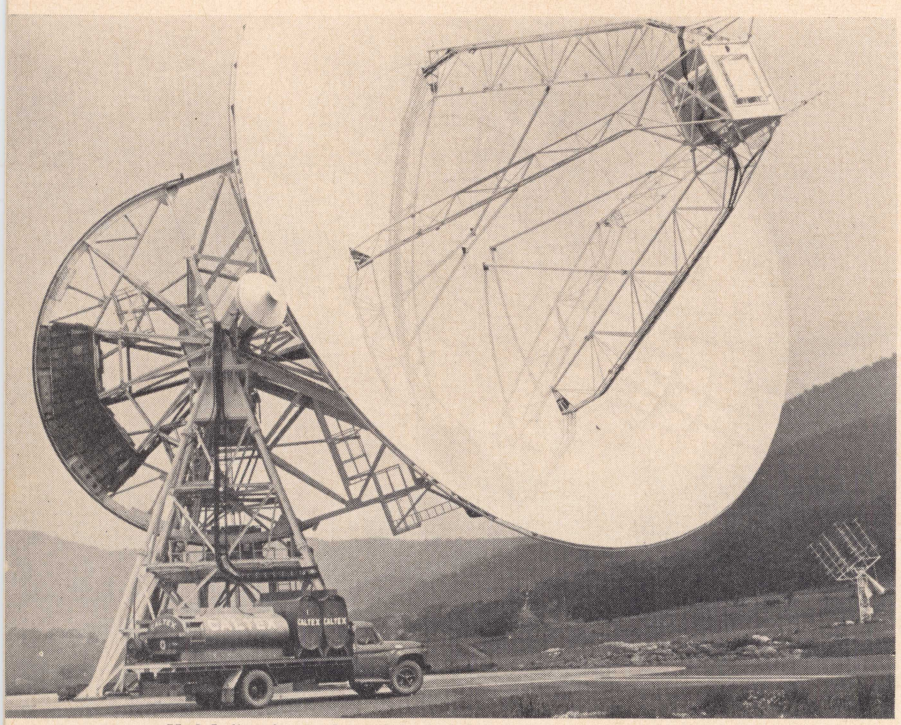
Val has been the Caltex distributor in the area surrounding Tharwa for the past 11 years. He runs the store (everything from horseshoes to horse radish), as did his father before him, he runs the two gasoline pumps outside the store (15,000 gallons last year), and he runs the distributorship, employing a driver, Rex Eades, and two trucks.

Up to fairly recently, Val's business comprised the usual rural accounts in the valleys and hills surrounding Tharwa.

But the advent of the space age has resulted in Val Jeffery becoming a V.I.P. in the plans by the United States Government to probe outer space and put a man on the moon.

To understand Val's importance in the scheme of things one must take the winding road, which quickly degenerates into a bush track in parts, west from Tharwa into the mountains of the Great Dividing Range.

Here, in two adjoining valleys, separated from each other by towering rocky hills, the Australian Department of Supply, on behalf of the United States National Aeronautics and Space Administration (N.A.S.A.), has built two of the world-wide network of



Val Jeffery's truck is dwarfed by the huge 85 ft. diameter parabolic antenna at Orroral Valley. On the right is one of the S.A.T.A.N. antennae.

The road to Honeysuckle Creek was gouged out of virgin bushland. Trees and granite boulders made road-building difficult. The road is snow-covered in winter, dusty in summer.

tracking stations necessary to the furtherance of the space programmes.

Both of these stations, Orroral Valley and Honeysuckle Creek, are about 3,500 feet above sea level.

The road, which is now being sealed and improved, provides its share of dust in the summer months and snow in the winter.

It is over the roads to the tracking stations that Val and Rex take product four times a week to keep the stations operable.

The Australian and United States Governments have entered into a co-operative agreement to facilitate the space flight operations being conducted by the United States under which Australia has undertaken to establish and operate a number of tracking stations.

The Weapons Research Establishment is the responsible agency within the Australian Department of Supply for implementing Australia's commitment with regard to the Australian stations.

As a matter of policy, Australian industry is being encouraged to participate in these space-tracking activities and the establishment at Orroral Valley is being operated by E.M.I. Electronics (Australia) Pty. Limited in association with Hunting Engineering (Australia) Pty. Limited and the station at Honeysuckle Creek by Standard Telephones and Cables Pty. Limited.

Caltex holds contracts for supply of product to both these companies and Val Jeffery is the man entrusted to get it there.

To understand the requirements necessary to maintain a tracking station one must first learn a little about their operation and siting.

To site a tracking station one must first establish that the area in relation to other tracking stations throughout the world is geographically suitable. For instance, the Honeysuckle Creek complex has been erected in connection with the manned flight to the moon. It will work in collaboration with two similar stations, also geared to the Apollo mission, located approximately 120 degrees

apart on the earth's circumference, at Madrid in Spain, and California in the U.S.A.

Next requirement is that the area is free from outside electrical interference.

Where it is necessary to screen stations from extraneous sources of electrical interference, such as from nearby towns or cities, they are sited in a bowl of hills.

Movement of motor vehicles is usually restricted within a defined radius of the station complex when tracking operations are in progress. To this end, red warning lights flash and messages ordering motor vehicle drivers to switch off engines are broadcast during tracking.

The tracking stations do not utilise town electricity but rely for all power on diesel operated Caterpillar alternator sets.

These banks of bright yellow alternators are huge consumers of Caltex distillate.

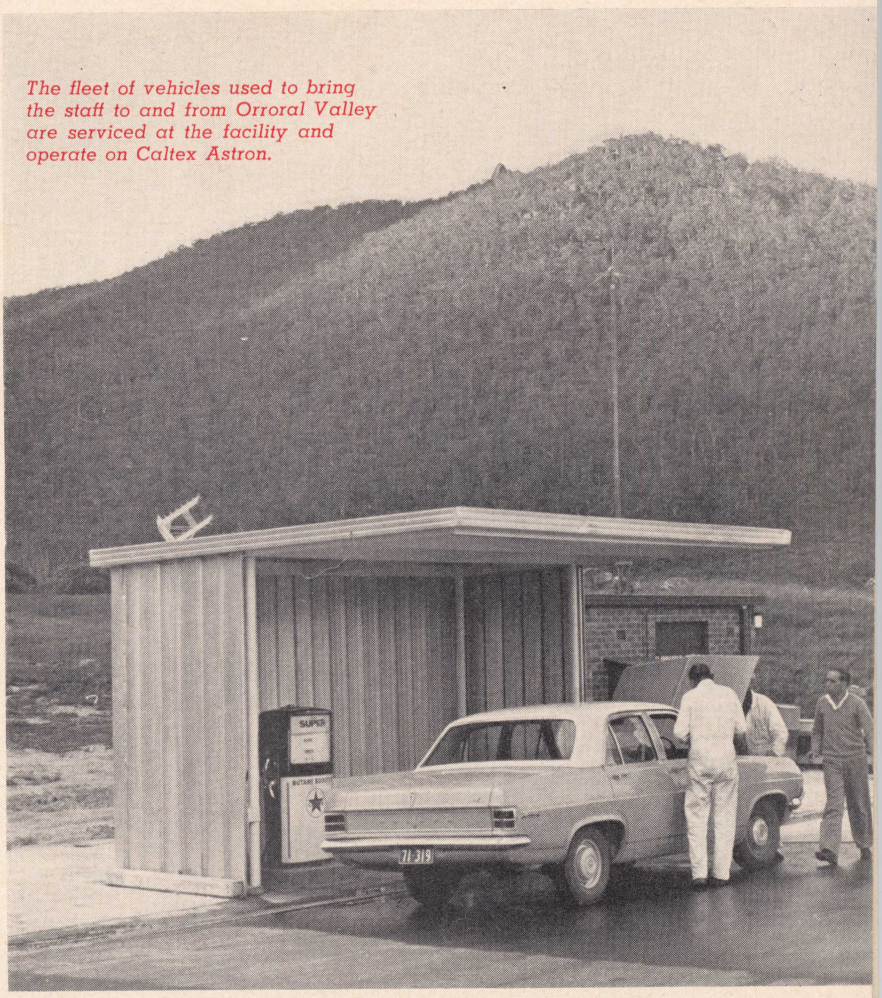
The tracking stations are remotely situated from normal places of habitation. Because of this, personnel have to commute daily from Canberra, 40 miles by road.

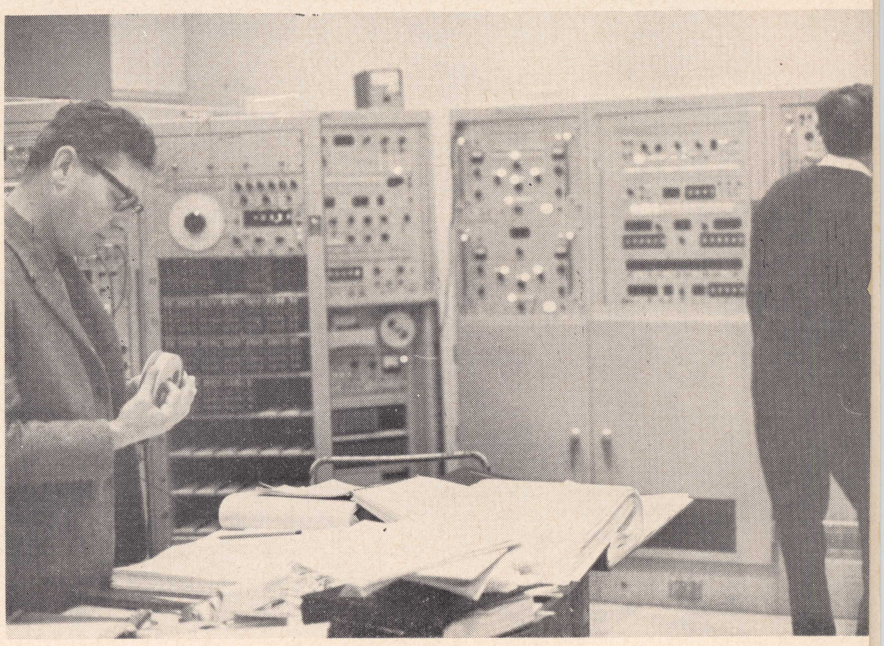
A fleet of motor cars brings the station staff to and from work daily.

In the case of the Orroral Valley facility, which is part of the Space Tracking and Data Acquisition Network (S.T.A.D.A.N.), the station is concerned with monitoring and receiving signals from the 30-odd scientific satellites orbiting the earth and sending back photographs and scientific data. The station has to be manned 24 hours a day. To achieve this, three shifts are worked and the transport vehicles are travelling from Canberra to the site almost around the clock. Caltex supplies the fuel and lubricants.

Orroral Valley has been operational since May this year. Honey-

The fleet of vehicles used to bring the staff to and from Orroral Valley are serviced at the facility and operate on Caltex Astron.





Engineers at work installing electronic equipment at the Honeysuckle Creek tracking complex. These instruments will play a vital part in the U.S. programme to put men on the moon.

Val Jeffery and Rex Eades make four deliveries weekly to the tracking stations. In winter, snow-covered roads restrict deliveries to half loads.

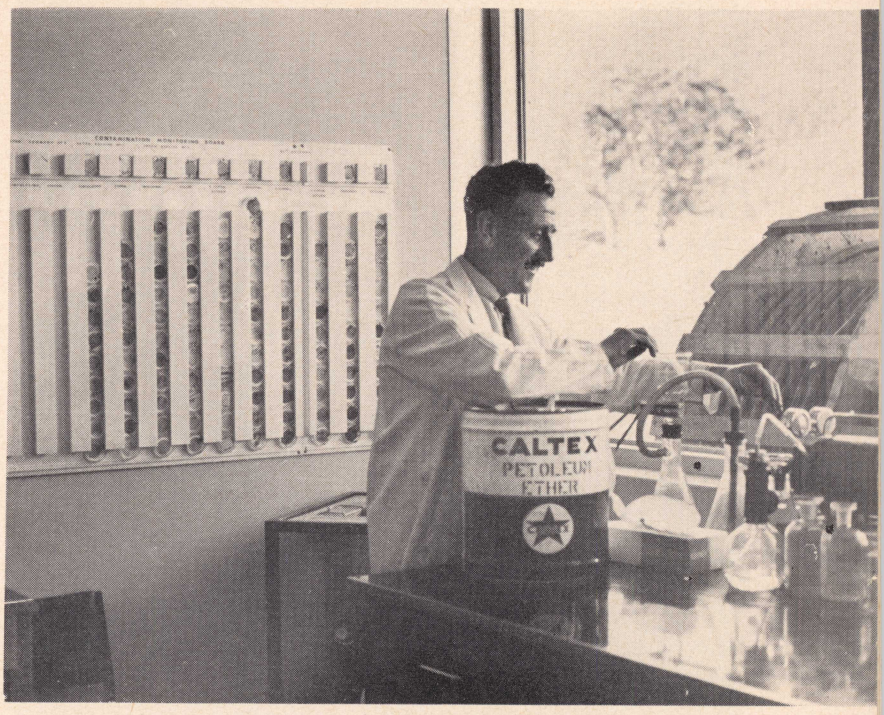
suckle Creek is due to commence operation in the near future.

The Orroral Valley station has one 85 ft. parabolic antenna and five smaller antennae. The large dish is used to track and pass commands to satellites and to receive data transmitted from them. Of the smaller antennae, three are used to receive data and two to transmit command functions to the satellites.

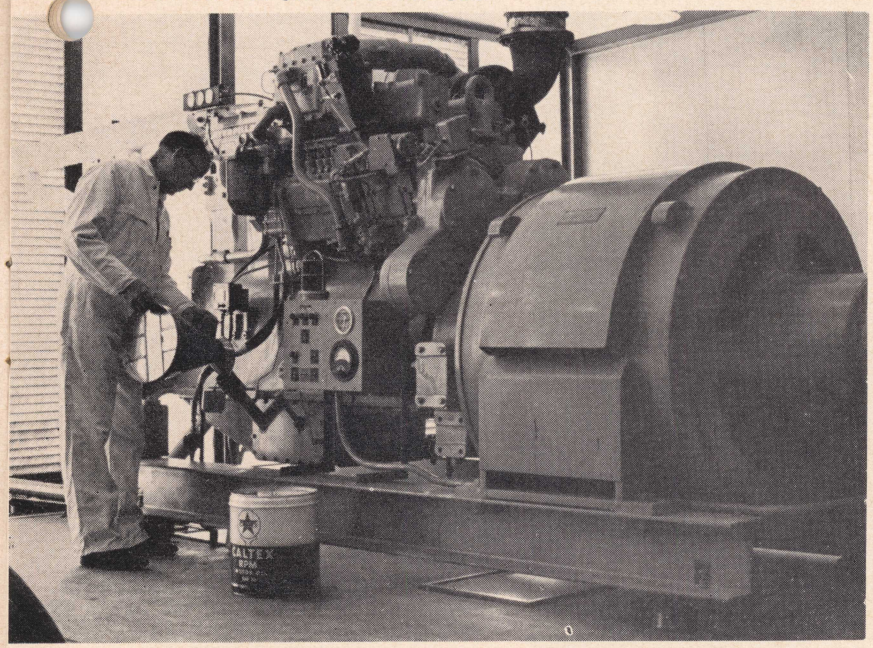
Modern satellites have facilities for recording and storing specific data. Orroral Valley can lock on to a satellite when it comes into range, command the satellite to transmit the recorded data, record the data as it is transmitted, and, just before the satellite passes out of range, command it to switch off again.

The data received can be transmitted live to the Goddard Space Flight Centre at Greenbelt, Maryland, over telephone links which are routed through the NASCOM facility at the Deakin telephone exchange in Canberra. Teleprinter links are also provided.

These lines are hired on a permanent basis and form a vital link between stations in the Canberra area and the world-wide network of N.A.S.A.



The Mechanical Maintenance Co-ordinator at Orroral Valley, Geoff Brazier, tests hydraulic oil for purity. The board in the background is used for contamination monitoring.



Topping up one of the Caterpillar Alternators used to generate electric power for the Honeysuckle Creek facility. The generators run on Caltex distillate, use Caltex lubricants.

Once a week, the Goddard Centre, by teleprinter, sends stations their satellite schedules for the week. Instructions include the type of satellite to be monitored, the approximate position to locate it and its orbital path.

The data acquired will either be sent back in "real time" (as received), by teleprinter, or recorded on magnetic tape and the tapes flown by aircraft to the U.S.A.

The latter method stipulates yet another requirement for the siting of a tracking station. It should be, preferably, close to an airport to enable the rapid despatch of tapes.

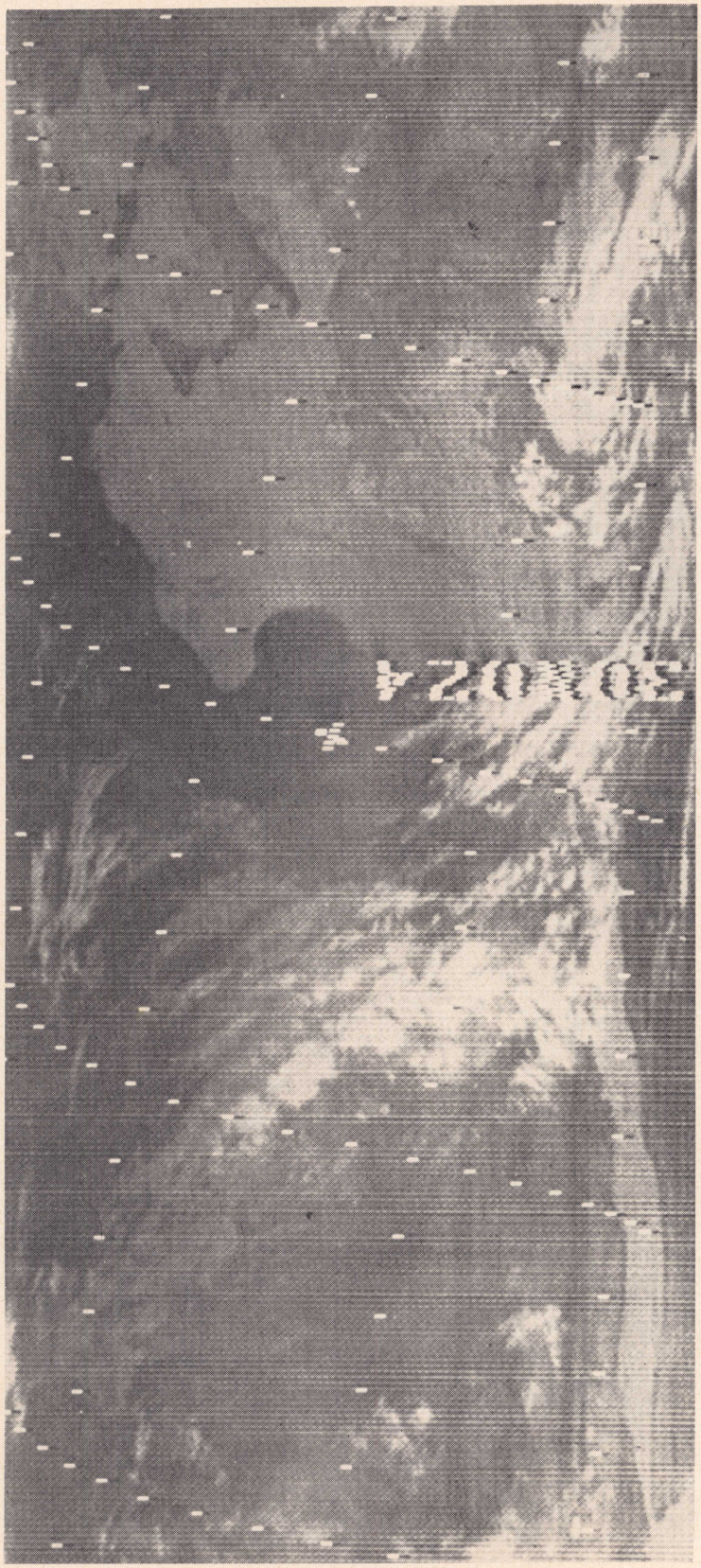
Orroral Valley, each month, requires 21,000 gallons of distillate for its power alternators and 4,000 gallons of Astron gasoline for its vehicles.

The antennae operate hydraulically and Caltex supplies the hydraulic oils.

The gear boxes for the antennae use Regal A (R. & O.) and the main bearings, Caltex Uni-Temp Grease with Caltex Multi-Purpose No. 2, for general lubrication.

The cog teeth of the giant 85 ft. diameter dish antenna are lubricated with Crater 2X fluid.

Val Jeffery or his driver Rex Eades makes four trips each week to each station with product. In



winter, when snow lies heavily on the mountains he sets off at 4.30 a.m. while the frost keeps the snow frozen solid. In the worst of the winter weather he can only haul half loads to the stations.

Orroral Valley was once a sheep grazing property and is set in a rural valley. The click of the shears has now given way to the blip of the spheres.

Honeysuckle Creek, on the other hand, is located in rough mountainous country with huge granite outcrops and eucalypt-clad peaks towering over the antenna.

Project Apollo, of which Honeysuckle Creek will be a prime station, is the biggest and most complex project of the United States manned space flight programme. Its goal is to land American astronauts on the moon and return them safely to earth.

The tracking station at Honeysuckle Creek will be manned and operated continuously while such activities are in progress. Although, during "off" missions periods, the staff may normally lead a 9 to 5 existence, during missions they will be required to be either operating or standing by their equipment. The station is equipped with sleeping accommodation for rest occasions.

Under the agreements between the Commonwealth Department of Supply and the Australian contractors, the Department appoints a Director to each station. The Australian contractors, E.M.I. and S.T.C., are responsible to the Department for operating and maintaining the facility.

A remarkable picture of the Mediterranean area taken by satellite and transmitted to earth. In the top left-hand corner of the picture can be seen the "boot" of Italy and Sicily. The streak down the bottom right hand side of the picture is the Red Sea. The white areas on the film are cloud formations.