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Our Cover

Cedric Morgan proudly stands by his beautiful wife as they sign the register after their wedding in St Anthony's Church, Kingscliffe, near Murwillumbah. The bride, formerly Miss Christine Browning, was for more than four years shorthand-typist and secretary for Halliday and Stainlay, solicitors, of Murwillumbah. Cedric is an outstanding footballer in the Tweed Heads district. The couple have applied to the Aborigines Welfare Board for a loan to build a house on their land at Tweed Heads. (Murwillumbah *Daily News* photo.)

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These children were among the crowd of about 250 which attended the opening ceremony (Photos courtesy Northern Star, Lismore)

RESIDENTS HELPED BUILD NEW CHURCH AT BOX RIDGE

The greater part of the new United Aborigines Missionary Church at Box Ridge Aboriginal Reserve was erected by voluntary labour of the Reserve's residents. The church was opened on 30 July by Mr Harry Wilson, oldest full-blood Aborigine on the Reserve, at a function which attracted 250 people from local and distant towns.

Mr Wilson was handed the key of the front door by the builder, Mr George Smith, who was assisted in the work by Messrs Cyril Smith and C. K. Coolwell.

The church was dedicated by Mr H. G. Wakerley, secretary of the United Aborigines Mission of N.S.W. Furnishings were dedicated by the Presbyterian minister at Coraki, Rev. J. Stavleu.

Speakers included Pastor F. Roberts snr, of Lismore, Mrs Alma Smith, of Coraki, Mrs Robertson, of Ourimbah, Miss Docherty, of the Bethshan Holiness Mission, Wyee, Mr E. Leggo, on behalf of the Aborigines Welfare Board, Mr G. Smith, of Coraki, and Mr J. Morgan, of Coraki, who responded on behalf of the Reserve residents.

Mr Wilson performs the opening ceremony watched by chairman of the function, Rev. J. B. Wilson, of Lismore Baptist Church, and Mr J. Morgan, of Coraki, full-blood Aborigine representative on the Aborigines Welfare Board



MODERN MOTOR MAINTENANCE— TRANSMISSION TROUBLE-SHOOTING

This is the eighth in a series of articles on motor maintenance reproduced by kind permission of Modern Motor Magazine.

Despite their numerous components and the hard work they do, modern automobile transmissions are really very reliable. The word transmission is used for the complete driveline from fly-wheel to road wheels, including the clutch, gearbox, tailshaft, final-drive assembly, and axles and hubs.

Cars with combined engine-gearbox-final drive units, such as the Mini Minor, VW, and the Imp, don't have tailshafts, so in many cases they use a short shaft which is part of the gearshaft. In other cars the gearbox gears drive the differential directly.

Usually transmission maintenance consists of an occasional check that the clutch-operating mechanism is correctly adjusted, that the drive-shaft universal joints are greased, and that gearbox and axle lubricant is changed at the specified periods. That is the maximum maintenance; many current cars have their transmission lubricated for life so that oil changes and greasing are eliminated, and only the clutch requires periodic attention.

The importance of having the clutch correctly adjusted cannot be over-emphasized. Hydraulic and mechanical systems require free-play between the linkage and the clutch-actuating fork. Insufficient clearance causes premature wear of the throwout bearing because it is continuously engaged, and also leads to clutch slip because the clutch is partially disengaged.

Excessive clearance, however, may contribute to harsh gear changes and prematurely worn gears and synchromesh, because the clutch does not disengage fully.

Much clutch trouble is caused by factors other than improper adjustment. For example, if the clutch is noisy when disengaged, a loose or worn spigot shaft bearing or a faulty throw-out bearing may be responsible.

Unfortunately, it is hard for an untrained person to accurately tell what is wrong by listening: unless you know what to listen for, a noise only indicates that something has gone wrong. Noises tend to combine and travel, to further confuse the issue.

Insufficient disengagement (clutch drag) may be caused by excessive free-play in the actuating system. This can be cured simply by adjusting the linkage. But dragging may be the result of a warped clutch plate, or a plate that sticks on the gearbox's input shaft splines.

Misalignment between the engine and gearbox is another possible reason for clutch drag, and lots of other troubles, too. In fact, if the engine and transmission are not aligned correctly, anything from clutch drag, vibration, and the inability to select gears properly can result. Fixing a misaligned gearbox sometimes means only tightening the engine-to-gearbox bolts, but when serious a new gearbox case may be required.

Clutch Slip

Clutch slip is perhaps one of the most difficult problems to trouble-shoot. It can be caused by many things. Some are easily fixed, but at other times a new part may be needed. Clutch slip caused by insufficient free-play in the operating mechanism can be fixed externally by adjusting the linkage. But when clutch slip is caused by oil or grease on the friction faces, or by sticking throw-out bearings, worn clutch plates or faulty pressure plates, the clutch assembly must be removed and dismantled.

MODERN MOTOR MAINTENANCE—*CONTINUED*

If the clutch grabs or chatters when being engaged (particularly evident when the vehicle is moving off from rest), the cause might not be in the clutch itself. Loose U-bolts, for example, often help cause transmission shudder. Loose or faulty engine mounts may result in similar reactions. Naturally, loose bolts should be tightened, and cracked, perished or oil-soaked mountings replaced. If the clutch assembly is to blame for the trouble, it must be repaired.

All gearboxes produce some noise, particularly in the lower gears. Often the only way of telling whether or not a gearbox is abnormally noisy is to compare it with the sound of another of the same model. Gearbox noises are caused by worn or damaged parts, insufficient oil in the gearbox, misalignment between the engine and gearbox, or dirt or metal particles in the lubricant.

Clashing of synchronized gears usually indicates that the synchromesh mechanism is faulty; this is aggravated if the clutch drags or if gear changes are made too rapidly.

Difficulty in shifting gears may not lie within the gearbox, but be caused by faults in the column gear linkage system.

All gearboxes can jump out of gear under some circumstances, but some models do this more often than others. Most common reason for jumping out of gear is that the gear was not engaged properly in the first place—either the driver or the linkages being at fault. Faulty engine mounts and improper engine-gearbox alignment also could cause this.

Back Axle Noise

Noises apparently coming from the back axle can be very deceptive. All final-drive assemblies

produce some noise, and a series of elimination tests must be made to pin-point the noise.

If the noise varies as the car travels over different road surfaces (say, concrete, hot-mix and chipped surfaces) at steady speeds, the tyres are probably responsible. Check this by driving the car over a soft surface, such as grass, when they should be quiet.

Front wheel bearing noise can also seem to come from the rear axle, so check for this, too. Faulty rear wheel bearings are usually betrayed by a persistent growl that does not vary on acceleration and deceleration, but may disappear when the car is driven steadily or when the brakes are applied lightly.

If there is noise when the car is stationary with the engine running, either with the gearbox in neutral or in gear with the clutch depressed, the rear axle cannot be responsible.

Differential noise is most pronounced on corners, so use this as a guide.

If the vehicle has travelled several thousand miles without any abnormal noise from the rear axle, and then a noise develops suddenly, it can generally be assumed that a bearing has failed or some adjustment has slipped.

When part of a transmission develops a fault, whether it is a matter of clutch adjustment or anything else, it should be attended to as soon as possible. If it is allowed to continue in service the faulty part will affect others along the driveline, eventually necessitating comprehensive repairs.

It is similar to a box of apples in which one is bad. Unless the mouldy one is removed, the rot spreads to the healthy ones.

RICHARD ROBERTS SHINES IN WOODBURN LEAGUE

Richard Roberts, captain-coach of the Woodburn rugby league football team, had a field day recently when his team beat Lower Clarence 43-9 in the Richmond-Clarence league. He scored 26 points from four tries and seven goals.

Richard could have made his tally look even more impressive but elected to give team-mates kicks at goal. This is just one example of his good sportsmanship.

His father, Richard Roberts senior, was one of the best centres in the Richmond league 20 years ago, and many people believe that Roberts junior is following in his father's footballing steps.

Richard is one of three players in the Richmond-Clarence league who have topped the points-scoring century in the minor premiership this year. He has played representative football for the league on several occasions, and it was only an oversight that he was not selected to play against the visiting English team at Kempsey recently.

Dawn in June carried an item in the Smoke Signals column about an incident involving a referee and a boomerang-wielding spectator at a match at Woodenbong. A letter (unsigned) to the editor of *Dawn* from "one of the spectators" at this match claims that there was no such incident, and that the story was put around by the beaten team.

But one fact seems clear; the Woodburn team has had one of its best years yet, and team members and supporters *do* take their football seriously. As the letter writer pointed out—"why not? It's our sport".

With lads like Richard Roberts to cheer for it's little wonder that feelings run high at times. MEANWHILE, FARTHER NORTH AT WOODENBONG the All-Blacks rugby league team has been making quite a name for itself. The All-Blacks played in a curtain-raiser to the second rugby league Test at Lang Park, in Brisbane recently. The team soon became favourites with the big crowd and drew loud applause with their unorthodox play. They scored a 10-6 win over Fassifern—a team picked from four clubs.

There seems to be football fever on the north coast as well as in Sydney.

PEN - FRIEND WANTED

Pretty Beverley Nolan, of 54 Macquarie Street, Dubbo, would like a boy pen-friend between 17 to 18 years old. Beverley is 16, but for more particulars you boys will have to write to her.



"I'll jump ship." The thought raced through the mind of ten-year-old Sammy Jervis, a half-starved, cruelly beaten cabin-boy, as he slept in his lonely hammock.

He had been fed on convict rations and lashed for the smallest crimes. From his hammock he heard the harsh voice of Skipper Jervis, his brutal uncle: "Lower away and get some water. We're running short."

Sammy ran on deck. "I'll go too, sir," he said.

"First time you ever offered to do anything, you lazy little devil. I've a good mind to leave you on shore," his uncle snarled.

Sammy choked back his tears. It was only six months since he had run away from home after his mother died, but it seemed six years—six hard terrifying years since he joined the bad ship "Regent Fox".

But now, as the men rowed ashore, he could not have guessed that he was to live to be one-hundred-and-seventeen and Tasmania's most famous character.

When the ship's boat reached the Tasmanian coast Sammy hid in some bushes and waited while the men filled their casks with water. Their task finished, the men casually called for him, shrugged their shoulders and rowed back to the ship. Half an hour later the vessel was gone.

Sammy, though he didn't know it, was the first white settler on Van Diemen's Land, as Tasmania was then called. For it was 1789 and Australia was still a savage, untamed wilderness.

He set off inland like a schoolboy on a holiday. He whistled, sang, drank water from a creek and ate some wild berries.

"This isn't half fun," he thought as he watched the sunlight stream through the trees and listened to the birds. But faces were watching him from the tangled undergrowth . . .

With a yell, half a dozen Aborigines appeared as though from nowhere, brandishing nulla nullas and waving spears. Terrified, Sammy turned and ran, crashing through the bush, scrambling up gullies, tripping over fallen branches and long grass, scratching his face and hands on brambles, words of terror bubbling from his lips.

The Aborigines settled down to the long, easy lope which, in the end, will outpace man or beast. In desperation Sammy headed for the sea, and, reaching a narrow creek, jumped in and tried to swim to the other side. With a whoop the Aborigines jumped in after him and pulled him out more dead than alive.

"For God's sake don't kill me," Sammy cried as he went down on his hands and knees. "I'll do

Sammy Jervis— The Tarzan of Tasmania

by Ben Gilbert.

anything. I'll be good to you. I'll teach you how to sail a boat, splice a rope or reef a sail. Anything. But please don't eat me."

Although the Aborigines didn't understand a word of Sammy's outburst, they thought him hilariously funny and burst out laughing. They told him in sign language that they meant him no harm and that he should go with them and get some food.

They taught him how to make a gunyah, how to fish, spear kangaroos, and cook a snake. He stayed with the tribe for twenty-five years. He forgot how to speak English, and adopted the Aboriginal way of life completely. He married, raised children, and became a respected tribal elder.

But he often hungered for the sound of an English voice, or the sight of someone to remind him of his former life. One day he wandered from the tribal hunting grounds into the hut of a settler named Cox, who watched the sun-blackened "Aboriginal" suspiciously.

Sammy carried a woomera, wore few clothes, and his gaunt, emaciated face was covered by an enormous beard. His hair reached to his shoulders. Arms outstretched, Sammy struggled vainly for long-forgotten English words.

At last he found words. "Me—me white," he managed to gasp.

Sammy became Cox's odd-job man, although it was months before he remembered enough English to tell Cox the whole of his strange story. And when he told settlers that not only was he English, but the son of a country squire, they laughed at him.

Ridiculed, Sammy moved from place to place, taking any odd jobs he could find. Although he convinced few people he was white, he didn't become bitter. He made many friends, and never forgot his old Aboriginal companions.

He lived to the incredible age of one-hundred-and-seventeen before dying at Launceston.

(From *Dolphin* magazine)

Breakfast is Important

Breakfast in many modern homes is inadequate or omitted because of the hustle and bustle of today's life, but this is a big mistake because breakfast is important.

If you miss out on the very important first meal of the day it is difficult to get enough nourishment for your body from the other two meals. Your body needs fresh supplies of energy at breakfast because 12 to 14 hours have passed since tea the night before.

The high industrial accident rate in the late morning hours, related to lower efficiency and fatigue, can be traced to an inadequate breakfast or none at all. People who have a good breakfast are less likely to have an accident at work because they are more alert, and they turn out more work.

Many housewives and girls with a weight problem don't have breakfast, in an attempt to keep down their weight. But this seldom has the

desired effect because these women usually eat more at dinner and tea.

Children often have an inadequate breakfast, or none, and this leads to tiredness and irritability in the late morning. This results in a poorer attitude to their schoolwork and they don't do well at school exams.

Apply these rules for better breakfasts:

- Get up early enough so that there is enough time to eat;
- Eat breakfast with all the family (if possible) so that it can become a pleasant time each day; and
- Plan simple, easy-to-prepare but varied meals, following this general guide—

fruit, or fruit juice if desired

oatmeal or wheatmeal porridge, or ready-to-eat cereal, with wheatgerm and milk and/or egg, meat or cheese

toast or bread

butter

tea, coffee or milk.

For weight-watchers the suggested breakfast could be modified by leaving out the cereal and by having only one slice of toast thinly buttered—but have the fruit, egg, cheese or meat, and tea or coffee (or milk) without sugar.

Remember that good-breakfast-eaters work better and think better.

(Contributed by the Department of Public Health)



Four of the senior girls wearing their new uniforms with pride. Left to right: Marjorie Warraweena, Sheila Clarke, Irene McHughes and Robyn Green

Right: Elizabeth Coombes joined Brewarrina Central School's Red Cross group, and with other children from the Station and the school marched in the town's Anzac Day procession

Far Right: The children looked unusually serious before their first trip to Brewarrina Central School because for them it was a serious and important occasion

BRE' STATION CHILDREN MOVE TO TOWN SCHOOL



Since February this year children from the Brewarrina Aboriginal Station have been attending Brewarrina Central School. This is the first time the children have been driven in the Station utility to the town school, and they have settled in to their new routine quite well.

The Department of Education late last year closed the school on the Station because residents were to be transferred this year to the new housing settlement in the town of Brewarrina. The families have moved now, but earlier this year when the children began at the town school it was an important occasion.

Parents made a fine effort to fit out their children in the school uniform in the first few weeks of the term, and the children wore the clothes with pride.

All trades and professions have a special language (called jargon) of their own, and many of the words used may seem rather obscure or confusing to those not familiar with the trade. At one time or another most people will do some painting around their house, so here are some of the terms most commonly used in the painting trade.

Primers, priming: Priming is the application of primer paints. The primary coat of paint is the first one applied to a new or unpainted surface. There can only be one first coat, but if it is desirable to apply two coats of priming paint this should be referred to as "two coats of primer".

PAINTING TALK

Stoppers and fillers: These often cause confusion. Originally, stoppers were materials used to stop-up nail and screw holes, and fillers are materials applied to large areas by knife, brush, cloth or spray. The newer water-mixed, plaster-type cellulose fillers are closer to the original stoppers, but generally a stiff paste (for example, putty) is used as a stopper and a thinner paste as a filler. Stopping-up is the filling of nail, screw and other holes. Filling means building-up or hiding the grain of wood over a large area, even if stopping-up materials are used.

Water white: This word is often used to indicate that the material is very clear and will not produce a yellowing or amber effect. Even water applied to a surface will alter the colour, so the term must be interpreted carefully when used to describe some polishes and varnishes.

Runs and sags: These are related terms, but do not mean the same thing. A run is a definite drip of paint, as from a door moulding on to a panel. A sagging effect is seen where the paint has been applied too heavily; even though the paint might have been painted-on well, it is unable to support itself as it sets, and slumps or "curtains" down the surface.

Glazing: This word has nothing to do with the same word used to describe the fitting of glass into window sash frames. In painting, glazing describes the use of a tinted varnish to get highlight effects over special finishes, such as graining or marbling.

YOUR CAREER— WOOLCLASSING

This information about woolclassing has been extracted from the booklet "Background to Careers", published by the Vocational Guidance Bureau of the Department of Labour and Industry.

Raw wools differ in many ways, for example, in length, colour, fineness, evenness, natural grease content and burr and seed contamination. It is the woolclasser who has to grade the wool with regard to such fleece characteristics into "types" and "lines" designed to meet the needs of the manufacturers. In addition to this, if he is working on a station property, he often has to supervise the

shearers and shed hands, attend to the books and be responsible for the maintenance of shearing machinery.

Entry A pass at the Intermediate Certificate examination is the present educational requirement for entry to the technical college Sheep and Wool Certificate course. The future requirement may be education to School Certificate standard.

Training (a) Sheep and Wool Certificate course. This is available at technical colleges at Sydney, Tamworth, Goulburn and Albury. The class instruction is conducted over 18 months, commencing in February and concluding in June of the following year, at each of the four centres except Goulburn. At Goulburn the class instruction is given in two stages from February to July in two successive years. Fees are \$60 a year. The course is also available over a longer period by part-time correspondence studies.

(b) Various short courses are available at technical colleges, for example, Shearing Shed Management and Bookkeeping, Shearing Shed Experting.

Prospects The majority of woolclassers are employed on station properties by woolbroking firms or shearing contractors. A competent country classer can earn \$60 to \$80 a week, but the work is seasonal. Other avenues of employment are with wool stores, woollen mills and repacking houses. Current rates of pay can be obtained from the Deputy Registrar, Commonwealth Conciliation and Arbitration Commission, 119 Phillip Street, Sydney.

Further information. Vocational Guidance Bureau's leaflet, *The Wool Industry*.





IMMUNIZATION PROTECTS YOUR CHILDREN

Immunization is a safe, reliable and simple step that parents can take to protect their children against dangerous diseases such as diphtheria, whooping cough, tetanus and poliomyelitis. Vaccination against these four diseases has proved greatly effective; the number of cases of diphtheria has decreased by 99 per cent since mass immunization was introduced in New South Wales in 1938.

Complacency The Department of Public Health has become concerned recently about a developing lack of interest in the community towards immunization. This lack of interest may have arisen from the spectacular decline of poliomyelitis, diphtheria and whooping cough in recent years.

But this decline will only continue while parents have their children immunized against these diseases.

Pinpricks Immunization injections are practically painless; they are little more than a pinprick. For children, the Department of Health recommends

the following courses of injection against whooping cough, diphtheria and tetanus:

- Infants under two years (beginning at three months of age)—three injections of the vaccine known as Triple Antigen, at reasonable intervals.
- Pre-school children over two years old—three injections of C.D.T. (combined diphtheria and tetanus antigen) beginning immediately if immunization has been neglected up till now.

C.D.T. is also given as a “booster” or reinforcing dose when the child is about five years old, or just before school entrance if the child has been immunized previously.

- School children—where immunization at pre-school age (as above) has been neglected, C.D.T. may be given up to the age of 17 years.

Where a child is more than seven years old a medical test for sensitivity should be made before a C.D.T. injection is given.

After the initial course of immunization, booster doses for tetanus should be given every five years, to maintain immunity.

Poliomyelitis A course of four injections (beginning at six months of age) is recommended for immunization against poliomyelitis. These injections can be taken in conjunction with the Triple Antigen course for children under two years, or with the C.D.T. course for children over two years.

See your local doctor, the Department of Health, or your local council about how and where to have your children immunized.

(Contributed by the Department of Public Health)

Smoke Signals



TIP FOR THE MONTH Clean windows by spraying with equal parts water and vinegar and wiping with a soft cloth. You won't need to rub hard to get clear, clean windows.

► The Residents' Committee at Wallaga Lake has donated \$166 towards education of their children at Bermagui Central School. School principal E. J. Ranyard heartily commended the donation but said that even more important was the tremendous amount of goodwill flowing from the willingness of the Wallaga Lake people to take an active part in the school Parents and Citizens' Association. The peoples of Bermagui and Wallaga Lake get on with each other very well indeed.

► Joyce Mercy, well-known social worker of the Foundation for Aboriginal Affairs, has gone to India to attend the International Seminar for Women's Education and Community Development. She was invited by the Women's International League for Peace and Freedom, a United Nations organization. When Joyce returns from India she will marry and move to northern Australia, where she will apply her valuable knowledge towards helping her people. Aboriginal people in Sydney will be very sorry when Joyce leaves for the north.

► Nurse Lenore Randall, of Grafton Base Hospital, took a well-deserved break from hospital routine in July, and spent three wonderful weeks with friends at Cairns, Queensland.

► The magnificent voice of Aboriginal singer Harold Blair thrilled crowds at South Sydney Junior Rugby Leagues Club late in August.

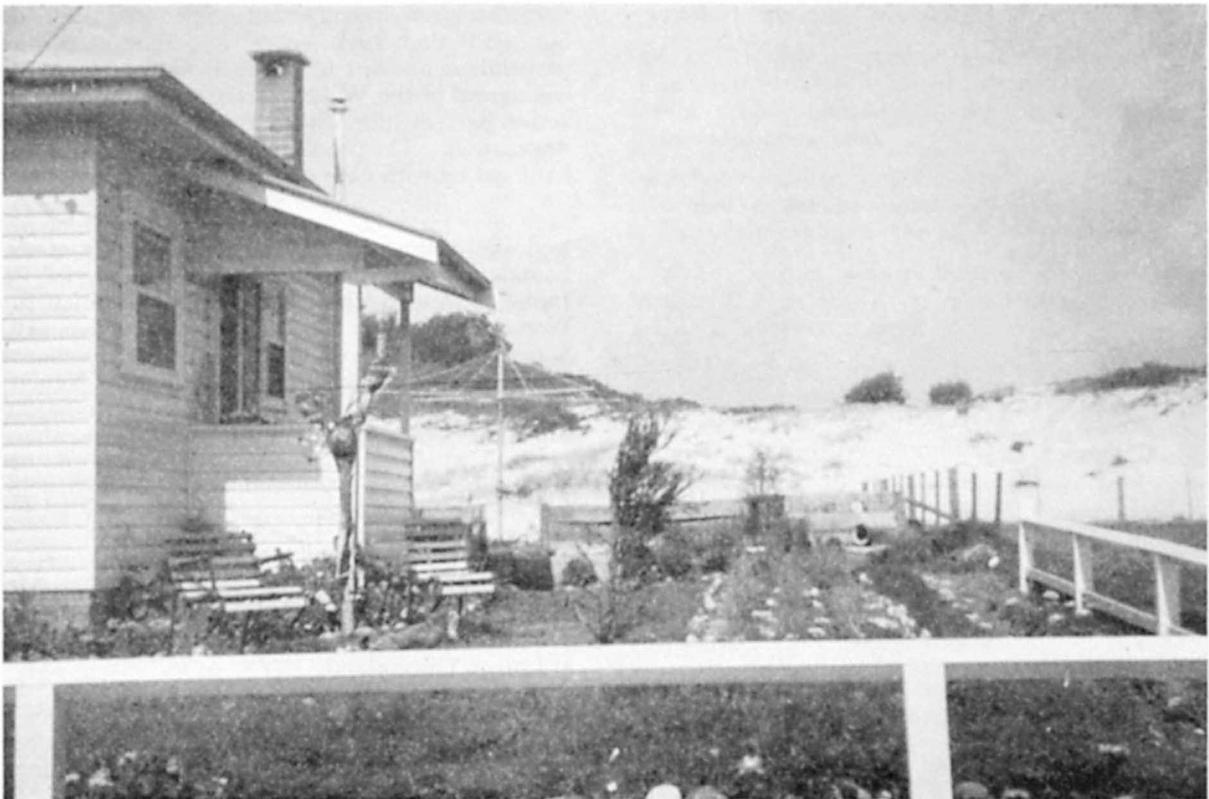
▶ A council of citizens on Moree Aboriginal Station will be formed to run Station affairs. Mr George Ord, former manager, has been appointed welfare officer at Tabulam. Mr Les Thomas, area welfare officer at Moree, said that the Aborigines Welfare Board felt sure there were many people at the Station who could assume the responsibility of running it.

▶ A highly successful talent quest at Moree Aboriginal Station early in July drew a crowd of 350 people. It was the beginning of National Aborigines' Day celebrations in the town. Mayor Lloyd presented prizes and complimented the artists on the high standard of the 22 acts, which were judged in 2 sections. Winner of the quest was Mr Ken Copeland, and runner-up, Mrs Margaret Craigie. President of the Moree Society for the Advancement of Aborigines, Mr Stuart Skillman, paid high tribute to the people of the

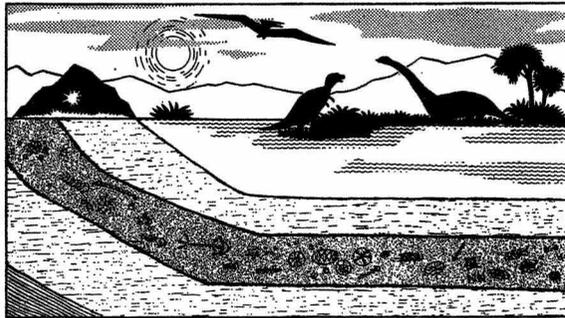
Station and principal of the school, Mr John Knobel, and his staff, who organized the quest.

▶ The La Perouse Homework Centre, run by the Consultative Committee on Aboriginal Education, urgently needs teachers. The centre, which helps Aboriginal children with their homework is seeking teachers willing to work one night a week on a voluntary basis. It also needs books for its library. Help would be valuable and greatly appreciated.

▶ Now that spring is here you will find many colourful gardens on Aboriginal reserves throughout the State, and one of the best is at Yamba. Mrs C. Vesper, of cottage No. 2 at Yamba Aboriginal Reserve, keeps her garden very tidy and attractive, as the photo—taken in winter—shows. The garden is a credit to Mrs Vesper, who is an old-age pensioner!

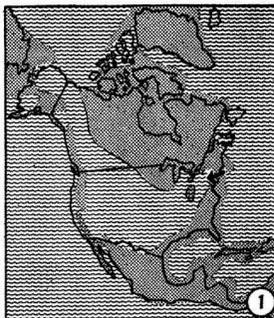
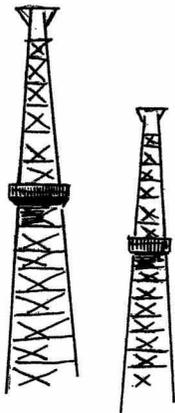


It's a Fact petroleum industry



Petroleum was formed from the remains of marine plant and animal life that settled to the sea bottom millions of years ago. Rivers carried silt and sand into the sea covering earlier deposits. Age after age new deposits buried the old. Heat, pressure and bacterial action, no one knows just how, turned the organic matter into tiny droplets of oil. Meanwhile, upheavals of

the earth's crust caused rock layers to rise and fall. What was once sea became dry land only to sink and rise several times. Oil, gas and water seeped through porous rock layers until stopped by a non-porous layer. Petroleum may be described as "fossilized sunlight" that fell on the ancient seas, and coal as "fossilized sunlight" that fell on land.



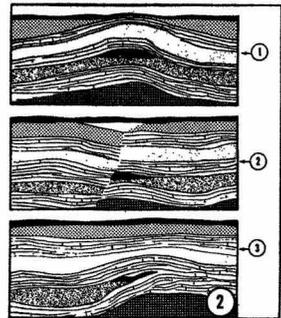
Oil-bearing rock layers, originally formed on the bottom of the sea, are sometimes found hundreds of miles inland—one of the richest oil fields is found in the Arabian desert. Some 300 million years ago the North American continent had an inland sea as shown above. The arrow points to the Pennsylvania oil fields where Edwin Drake drilled the first successful oil well.



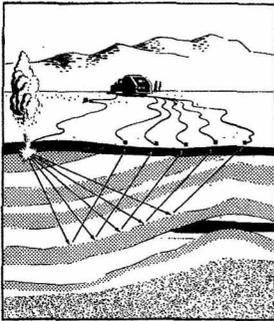
After Drake's well and the host of others that followed it, strange ideas sprang up about oil. Many people believed great rivers of oil flowed underground for hundreds of miles. Some oil hunters hired "dowsers" to locate underground oil. "Dowsing" is an unreliable way to locate water and useless in finding oil.



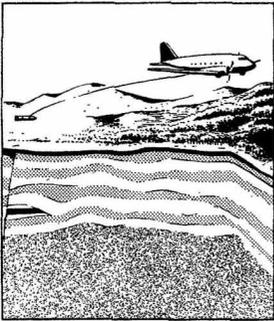
John F. Carl, an American geologist, became interested in the early search for oil. He roamed the whole oil region around Titusville collecting records, such as they were, on dry wells and active ones. Carl's scientific approach and organization of available data probably did more to develop petroleum geology into a science than any other single man.



Carl's research confirmed the theory that oil collects in pools where it has seeped into pockets of porous rock, such as sandstone. Oil is found in sedimentary rock—but not in all sedimentary rock. Three rock formations oil men look for are the anticline (1), the fault (2) and the stratigraphic trap (3) for the best chance of finding hidden oil. (Continued)



In order to "see" the desired underground formations, scientists use several devices. The most widely used is the seismograph—the same instrument used for detecting earthquakes. They explode dynamite below ground (1). The time it takes shock waves to bounce back to surface detector phones (2) gives them a fairly accurate picture of the underlying rock layers.



With this torpedo-shaped instrument suspended from an airplane an area can be surveyed that would take a ground crew many months to cover. It is a magnetometer, a highly developed magnetic compass. It detects differences in the magnetic properties of various types of rock formations. It does not detect oil, but it locates hidden formations that might contain oil.

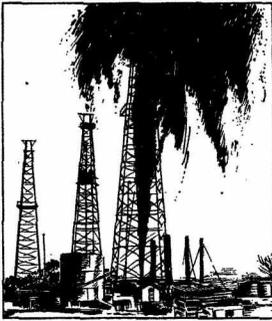


When a promising spot is found by aerial and seismographic study, the search is narrowed down to a specific location where the gravimeter is used. The gravimeter is sensitive to variations in the pull of gravity. Here it locates an anticline—its dial registers a slightly stronger pull at the top of the anticline because at this point the dense base rock is closer to the surface.

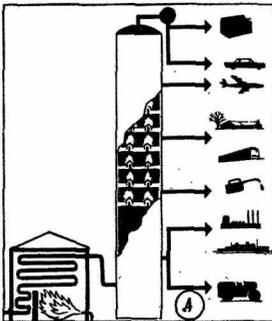
(Continued)



The proof of the petroleum geologist's work lies in drilling the well. Drilling is an expensive operation and always a gamble. Only three out of a hundred can be called commercially successful. The rotary drill is the type most commonly used. It bores into the rock like a huge carpenter's bit. Lengths of pipe are added as the hole goes deeper.



In early days, many wells came in as dramatic gushers. Today gushers are rare. They are undesirable and dangerous. When the drilling has reached the predetermined depth the crew installs a "Christmas tree", a massive collection of valves, over the hole to conserve the natural pressure and prevent a gusher. Controlled natural pressure can often keep a well flowing for years.



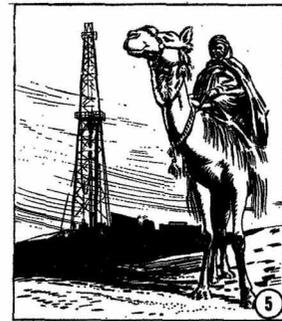
In the refining process crude oil is heated to about 800° F. (422 C.). Vapors pass into a fractionating tower and rise through openings in a series of trays. The lightest, cooking gas, goes to the top; asphalt and heavy tars remain on the bottom. The other fractions distribute themselves among the trays according to boiling temperature ranges. (Continued)



The United States ranks as the leading oil-producing nation, accounting for over a third of the world total, and consumes more than all the other countries combined. The Middle East nations of Iraq, Iran, Kuwait and Saudi Arabia, however, have the world's greatest oil reserves. Oil reserves are deposits still beneath the surface that engineers believe can be removed profitably.



A hundred years ago crude oil gave one important product, kerosene. Today gasoline is the most important single by-product. However, scientists, by rearranging the molecular patterns of petroleum have made available a wide range of new products. Synthetic rubber, developed during World War II, has made the U.S. practically independent of natural rubber. The new textile fibers, dacron and nylon, come from oil.



The petroleum industry spans the globe. Derricks in Texas are similar to those in oil-rich Arabia. The refineries in Rumania are counterparts of those in New Jersey. Nearly every country of the world has some petroleum, but only a few possess enough to fill their own needs and to supply others. Therefore the question of petroleum is a permanent international problem. (The End)

Pete's Page

Results From AUGUST Dawn



Hello Kids,

In the past few months you may have read quite a lot in the newspapers about education of Aboriginal children. Many children think there is no sense in trying to pass the Intermediate Certificate or the Leaving, or the other high school exams.

These children feel that they will end up in a labouring or unskilled job, and most of them do. But only because of their "what's the use?" attitude.

This is a very sad thing girls and boys, because it has been proved that Aboriginal children are just as clever as white children. In the country it is often hard to get a job even if you have passed your high-school exams. And it's harder for Aboriginal children to pass these exams because many of their parents do not encourage them to study. But don't ever think that a good education is of no value to you.

You'll find Aboriginal people in well-paid and responsible jobs in Government departments, in the nursing and teaching professions—in fact, almost everywhere in the community. They got those good jobs because they studied.

People are stupid who say it's no harder for Aboriginal people. It is. But those who say "what's the use?", or "it's impossible"—they're stupid, too.

Make sure you give yourself a chance—by working hard at school.

'Bye for now Kids,
See you next month.

Pete

Answer to August puzzle

Christmas

New Puzzles

ANIMAL IN THE STARS The stars between the rows of letters represent the letters in the name of a very large animal. If you guess the name correctly you will find that, when read downwards, eight three-letter words have been formed.

H O S S S T A S

* * * * *

N D W Y E N T Y

WORD SQUARE The answers to the four clues will, if written below each other, read the same across as down.

Centre of an apple.

Not closed.

Books are to

Finishes.

BACK COVER

Johnny Raper, star rugby league footballer, showed Brian Olive how to play-the-ball in Casino last month. Brian, of North Street, Casino, comes from a footballing family, and plays in the local high school team. The other boys were playing in a match between Kyogle and Casino high schools. Johnny Raper was on a tour to promote rugby league among schoolboys in the region. (*Northern Star* photo.)

