

"SEA LAND and AIR"

THE AUSTRALIAN NATIONAL MONTHLY

— OF —

TOPICAL INTEREST

Edited by M. DIXON.

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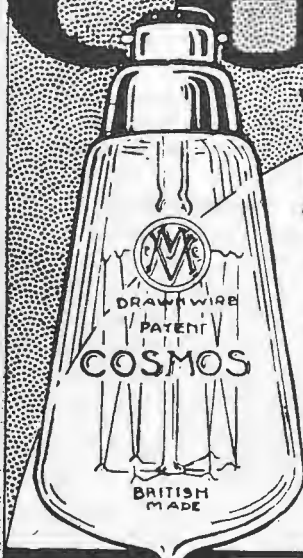
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SEA LAND AND AIR

AUSTRALIA'S
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Month by Month

Faith Healing and Other Matters.

COUÉ, a Continental scientist, has lately developed the theory of auto-suggestion so marvellously, and so beneficently applied it to the cure of many human ills, that the medical fraternity are reluctantly admitting that there may be something in it after all. Professor Coué, in effect, encourages the patient to convince his sub-conscious ego by persistent reiteration that his health is improving daily; and that elusive entity being amazingly credulous and sensitively receptive to impressions, believes, and is made whole. Innumerable experiments have conclusively proved the theory.

Sydney now has in its midst Mr. Hickson, a religious devotee, who heals by faith. This inspired visitor, like Professor Coué, has performed miracles of healing, but by dissimilar methods, and does so under the aegis of the Church.

Faith healing and restoration to health by auto-suggestion are practices by no means new. Those of us who are mere laymen, scarcely able to hazard an explanation of the inexplicable mystery of either science, may be pardoned for wondering what part hypnosis plays in these matters. To the medical fraternity it has been known for very many years that hypnosis can be made to play a most important part in the treatment of the ill and the maimed. In Sydney itself a leading Macquarie Street physician utilized his talents as a hypnotist for over thirty years, during which period he hypnotically anesthetized hundreds of patients, who were operated upon by leading surgeons. Papers

read by him to the B.M.A. describing his methods and tabulating the results are extant in the printed records of that body. And that medico is alive to-day to afford personal testimony.

Self-hypnosis is so well known to scientists that it is not regarded as a phenomenon. If, then, by faith one may alleviate his sufferings or gain immunity from pain, why should there be scoffers? If by auto-suggestion one can achieve the same fortunate state, then let us all become happy and contented.

—G.B.

Fur Industry.

Skunk farming is rapidly becoming a paying industry in England. The first farm was started in the Chevoit Hills, in Northumberland, in 1913. The war strangled it for the time being, but it sprang up again in 1919 and was successfully floated into a company. A second farm has since been established in Dartmoor, where it is proposed to breed silver fox as well as skunk. To breed good skunks a great deal of care needs to be taken of their diet; they also require good water and rough moorland country.

In its native state the skunk is half black and half white, and in breeding the white has to be eliminated as nearly as possible to get a valuable skin. This is being gradually accomplished at Dartmoor, where a hundred animals are thriving to-day, and are so tame that they eat out of the keeper's hand.

The farm embraces a hospital for sick skunks, a "lounging ground" for rest after repletion at meals, a drinking pool

of spring water, and kennels where twelve or fourteen little skunks can take an afternoon nap at a time. Wire fencing surrounds the estate, which is thickly covered with woods of pine and larch, and is thirteen hundred feet above sea level. Cold nights are necessary for the production of superior fur. These are the first fur farms in the British Isles.

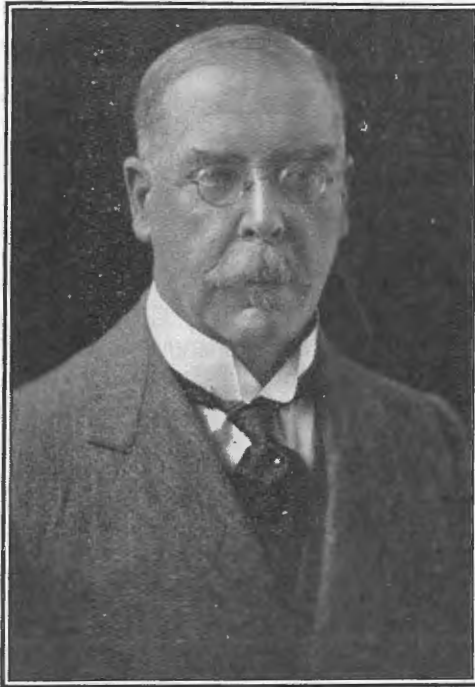
—M.M.

The "Sighted Blind."

The expression "sighted blind" would seem to convey an impossibility; how can one be both blind and "sighted" at the same time. The term is, however, the technical description for such subjects who have just sufficient sight to see objects very indistinctly. To the average man who is biassed by the old adage, "in the kingdom of the blind the one-eyed man is king," this would seem an advantage. In reality, it is a disability. The fact that there is some small measure of sight tempts the person to depend on that, instead of relying on the senses of hearing and touch, which in the absolutely blind are capable of being developed into an almost uncanny proficiency, and to largely compensate for sightless eyes. He gropes awkwardly about the table, knocking down crockery and cutlery; he bumps into pedestrians in the street, and is generally a distressing object to himself and others. To overcome this tendency of the slightly sighted to take the line of least resistance and neglect Nature's own means of compensation, the educator blindfolds the "sighted blind" pupil, and thereby allows development of the faculties of hearing and touch. At first the patient is

more at a loss than ever. But after a time the justification of the proceeding is evident; the once awkward and clumsy and helpless being becomes a highly trained expert in various useful matters. He finds his way unaided in the streets; he reads by touch; perhaps he earns a good livelihood by weaving baskets or mats; uses the typewriter rapidly and accurately, or plays the piano or other instrument as excellently as any of his more fortunate brethren to whom is given the beneficent faculty of vision.

—T.J.H.



His Excellency Sir Walter Davidson, K.C.M.G., Governor of N.S.W., who is an enthusiastic reader of "Sea, Land & Air."

Lady Chemists.

The path of the ambitious girl striving to find a foothold amid the rocks of a pharmacy career is narrow and extremely rough, being beset on all sides by disappointment, disillusionment and disgust.

In Sydney at the present time it is almost impossible for an intelligent, well-educated girl, of limited means, be she ever so ambitious and enthusiastic, to obtain an apprenticeship at a druggist's store.

What are the reasons for such a condition of affairs?

Is pharmacy a career to be forever closed to women in N.S.W.? It is beginning to look like it,

for the master chemists will not even look at girls who ask for positions, and are rude when approached; civility and courtesy they reserve for customers, not for applicants.

There are numbers of women studying for pharmaceutical careers at present at the University and at the Technical College. What will become of these girls when they come to look for positions? Without money and influence, they will not be successful. They will have to look

for other careers; they will lose their enthusiasm and ambition in their disappointment. Of what avail will be their hard-won diplomas? The palpable unfairness of the master chemists moves one to protest, but they seem to be adamant. Girls are every bit as adaptable as boys; in many cases they show a greater aptitude. Why not give them a chance?

—B.L.

Lazy Electors.

It is not the function of a monthly magazine to dabble in politics. The game of "ins and outs" has its thousand and one articulate journalistic tongues. But the late Federal elections have provided a striking example of the absolute indifference that is evinced by thousands of the enfranchised citizens of Australia to their legislative welfare. Statistics compiled by the electoral officials show that scarcely fifty people in every hundred took the trouble to exercise their right to vote. When it is considered that the women preponderated as markers of ballot papers, it would seem that not twenty-five per cent. of the male population could muster up sufficient interest or energy to wander along to the polling booth on election day. And ten per cent. of those that voted so mulled and muddled their ballot papers that their votes were hurled to the limbo of the "informals." Whether the lack of interest in burning political questions of the day should be taken as a serious reflection on the intelligence of the populace is difficult to determine. What is responsible for it is hard to discover. Those that care to ponder upon the matter may derive their own conclusions. Howbeit, what-

ever may be the cause of this political *laissez-faire*, its effect is a serious commentary on Australia's appraisalment of its greatest national heritage, "one man one vote." Political questions of intense moment to our people were before the electors last December; but who cared? The only way apparently to arouse a cyclonic electoral storm would be to suggest the abolition of adult franchise. It would be a 99 per cent. vote.

—G.B.

The Value of a Slogan.

A slogan is defined as "a battle or rallying cry," and is said to have originated in the picturesque Highland Glens in the wild old days, when the clans poured forth to annex the flocks and herds of the trespassing Sassenachs. Since those turbulent times the slogan has fallen from its high estate. First, the politicians marked it for their own; and from "Wilkes and Liberty" to "Hang the Kaiser" great parties fought fierce campaigns by its artful aid. Then the traders came along and exploited its psychological utility, and as a result we read on every hoarding, or in every tram, such alliterative phrases as "Cartrell's Comfy Cushions Cure Corns," "Bartlett's Brown Biscuits Beat the Band," or "Try Thomson's Tasty Trypanosome Tea." Here in Australia we had an illustration of the value of a personal slogan in the late general election. This magazine has no political bias, but without intrusion into the domain of party politics it is admissible to believe that the reason Mr. Senator MacDougall topped the poll by such a majority of primary votes was largely due to the undying popularity and wide circulation of the late Mr. Spencer's



Hill View,
Sutton Forest.
Xmas Eve 1922

The Editor
Sea Land & Air.
I have just read (through your
December issue. - The standard is
high & informative.
Have my compliments to
E.S. Sorenson for his excellent
story of "Xmas on the Road"
your own copy
M. P. Davidson

Facsimile of letter written by His Excellency after reading the December "Sea, Land & Air."

humorous poem, "How MacDougall topped the Score." Without questioning that his own deliberate supporters would have given him a leading place, it is eminently probable that the psychological law of the association of ideas impelled thousands of electors, almost unconsciously, to write their No. 1 against his name on the ballot card, because by the association of ideas it sent humming through their heads the lilting refrain "How MacDougall Topped the Score."

—T.J.H.

Justice — or Revenge?

In England quite recently a semi-conscious woman was carried to the scaffold and hanged for alleged complicity in the murder of her husband. It is not intended here to provoke a discussion on the justice and deterrent value of capital punishment, but merely to ask in the name of humanity what good purpose the authorities in England hoped to achieve by the perpetration of such a callous and barbarous act?

There was a time when women in England were burned at the stake, and even children were hanged for simple thefts, but that was over a century ago, and we have many times since congratulated ourselves that those ghastly happenings of the Stone Ages would never again besmirch the fair name of British justice. Unfortunately there was a slip in the march of progress we have made towards better things when the Home Secretary turned a deaf ear to an eleventh hour appeal for mercy and allowed a creature in human form to carry out the dread sentence of the law on an almost lifeless woman in the first few days of 1923.

If capital punishment can be justified at all it is only on the ground that it has a deterrent effect on others who may harbour similar designs to the person convicted of a capital crime. Even then, only a man devoid of all humanitarian instincts would insist on applying it to a woman.

Dr. Devon, a noted Glasgow criminologist, once aptly summed up the situation when he wrote: "*If we are better than criminals we should show it by our actions. If we are better than those whom we judge and condemn why do we treat them as they have treated others?*"

Present-day advocates of capital punishment might well ask themselves the question "Why?"

—M.D.

Making the Whole World Kin.

At a suburban electoral booth during the recent Federal elections a voter was surprised to see the man who found his number for him on the roll-book standing at his elbow. The voter, being a journalist, was surprised further by the man asking him what paper he wrote for.

"How do you know what I do?" he asked, with whetted curiosity.

"Entered in the roll-book as a journalist."

The journalist, cornered, gave the name of his chief source of income. Then the man of the polls became confidential.

"Do you think you could possibly manage to get my wife's name into your paper? She has just had a gorgeous new sports coat sent out from her people in England as a Christmas present, and I'm taking her to tea at the Australia on Tuesday to show it off. She'd be tickled to death if she saw herself mentioned in the newspapers."

—M.M.

The Bird Hospital.

Dr. Virginia Hope, a sweet-faced, little, silvery-haired lady, owns and personally directs the tiniest hospital in the world. It is situated in New York.

All sorts of feathered patients lie and convalesce in dainty little wickered baskets, painted white, and padded with soft, white cotton. These baskets are supported on tall wicker stands that form the beds.

Dr. Virginia's work is a labour of love; she knows and understands birds—and they trust and worship her. She acts as surgeon, nurse and druggist all in one. There is an operating-room, with all kinds of small, shiny, sterilized instruments, also fairy-like casts and splints.

And (just imagine it) a sun room, where the birds may flutter back and forth in a bower of green.

There is also a tiny, delicate store, stocked with fat wriggly worms in glass bottles, to gladden the hearts of the birds, and hundreds of brilliantly coloured dragon-flies (in the way of *hors d'oeuvres*) to tempt the invalid appetite. Also, just

the right kind of seed for each patient's diet.

Every one of Dr. Virginia's patients love the big-hearted woman who tends them so devotedly. As she passes on her rounds rows of little feathered heads bob up over the sides of the baskets, and dozens of shrill bird voices chirp at her.

She keeps her books, too, in the manner of a regular hospital, and at one time had as many as seven hundred patients on the roll. Dr. Virginia is one of God's gentlewomen. Endowed with a comfortable share of worldly goods, Nature has further blessed her with a large and warm heart, filled to the overflow with sympathy and sweetness and loving kindness.

Most of us, in our busy, self-absorbed lives, have no time to think of the helpless and beautiful birds that gladden with their bright chirpings this sometimes dreary world.

May there be many more such women as Dr. Virginia Hope. Men would then have good cause to say:

"God's in his Heaven,
All's well with the world."

—B.L.

Encouraging a Plague.

For half a year a disingenuous individual has been actively urging Australian pastoralists and farmers whose holdings are infested with rabbits to introduce stoats and weasels so that the rodents may be exterminated. His knowledge of the destroyers was derived in New Zealand, where, according to his persistent assertions, bunny is well-nigh extinct. Altruistic though the sentiments of this gentleman may be, it is well for Australian landowners to know that farmers in the Dominion are just beginning to realise that the stoats and weasels, finding their natural prey unprocurable, are directing their carnivorous energies to native birds, domestic fowls, and new-born lambs. Australia is already cursed with too many imported pests to warrant the welcome of any more. The rabbit has cost the country countless millions since the first cheerful idiot imported a crate of the grey rodents and turned them loose on the land. Other pests that worry the life and pocket of the settler comprise an extensive catalogue. There are burrs, Bathurst and Noogoora, prickly pear, stinkwort, thistles of

all descriptions, lantana, blackberry, briar, dodder and innumerable other weed pests. The fox is now a formidable enemy of the sheep-man, and levies toll on every unprotected hen-roost in the bush. From the air the unfortunate settler is harrassed by sparrows and starlings, and around his stock buzz imported insects of devilish description, wreaking disaster and spreading disease. In the face of these things it is positively amazing that the sufferers from plagues infinitely worse than those that worried the ancient Children of Israel should listen for an instant to a suggestion to import a further one. Experience has proven that under Australian conditions animals, plants and insects introduced here from other countries assume characteristics entirely new and almost baleful. The rabbit of the Old World is an animal that is timid and delicate, and, at the same time, meagerly reproductive. In Australia it is a hardy marauder, with a prolificacy that is staggeringly enormous. The same can be said of all the other pests enumerated, animal, plant or insect. It behoves all good Australians, therefore, to keep a brick handy to heave, with great unanimity and enthusiasm, at the next misguided person that suggests the importation of anything likely to become a curse and a calamity.

—G.B.

Novel Insurance.

Nowadays the whole world is bent on making easy money. The Australian punts at Randwick and Flemington or takes tickets in the Golden Casket, the Englishman bets on the boxing ring, the Irishman on a free funeral, but the Scotchman sticks to insurances. They all come to the same thing in the end.

A Scotchman living in Sydney lately had a great bit of luck with his last policy. He insured his wife against the birth of twins, and last month he collected a hundred pounds from the insurance agency. She had them.

—M.M.

* * *

We never know the true value of friends. While they live we are too sensitive of their faults; when we have lost them, we only see their virtues.—J. C. and A. W. Hare.



THERE was a sudden jar of bitter combat in the shanty. Hoarse, challenging curses rose above the din of fighting, and the crash of shattering glass was everywhere.

The loungers on the hotel verandah manifested not the slightest concern. The battle, with its noise and rancour, scarcely stirred their notice.

Billy the Dodger, leaning against a post, spat viciously into the dust.

"Old Bogan an' Spike Mahaffey's at it agen," he said languidly.

For five minutes the sounds of warfare continued. The sickening thud of body blows, heard occasionally above the clangor of curses and stamping feet, proved the earnestness of the combatants. But none of the loiterers outside even turned to glance through the open bar door to where the two men fought and wrestled.

"Yairs! Ther silly cows." This was the belated addendum to the Dodger's earlier remark, proffered by Steve Boner.

After another minute the scrappers had carried the battle on to the verandah, thence into the dust of the roadway under the pepper trees by the horse-trough. It was crude fighting, deadly in its vicious earnestness. Blood streamed from the battered faces of the two aged men, staining their white beards and tattered shirts. They made an unpleasant picture, these two drunken, dirty ancients, as they swayed and stumbled in the deep drifts of red, soft dust. But the watchers on the verandah betrayed but little interest. It seemed as though they had seen so much of that sort of thing that all the zest had gone from it.

At last Bogan landed squarely on his

antagonist's chin, sending him sprawling in the dust. Mahaffey attempted to rise, but Bogan's boot caught him savagely in the ribs, and he fell back with a grunt. Even this kicking of a prostrate foe did not cause the loungers to protest or interfere. They sat and watched dispassionately.

But the trooper, cantering down the road on his big roan horse, saw the repeated pedal assaults. Reining in at the horse-trough, he hurriedly dismounted, and seized Bogan round the waist, throwing him heavily.

"You old cur," he said angrily, as he stood over the fallen veteran.

But next moment he was violently assaulted in the rear by Mahaffey, who had risen.

"Don't you punch my mate," screamed Spike, as he rushed the policeman again.

Then Bogan got to his feet, and the trooper was busily engaged defending himself against both until the publican rushed from the bar and took a hand. Peace was restored with difficulty, but the irate trooper was intent on arresting the fighters. Only his timely remembrance of the fact that no J.P. would be available to try them for a week made him entertain the publican's plea for mercy.

"You see," explained the hotel-keeper, "Old Bogan an' Spike has been mates for forty years. They get on the spree together an' they always ends up in er fight. They argue hammer an' tongs all day about anythin', an' they fight it out. We're all uster it here, an' takes no notice because they don't like bein' interfered with in their scrappin'. It's all-in rules with 'em, too, bitin', gougin', kickin' an' hittin'. If

anybody tries to stop 'em they both turns on him an' gives him er hidin' fer buttin' in. That's why we let 'em rip."

The old mates were now apparently on the friendliest terms, although they were arguing vehemently about who was to pay for the drinks. The matter was adjusted by each shouting for the crowd in turn.

An hour later the trooper gazed at the hoary old derelicts, trudging, with their blueys up, out towards the abandoned diggings where their camp was. And he listened to the raucous din of an angry argument between them, but now disinterestedly. He had learned the history of these two old men, mates for nearly half a century at mining rush, in navvies' camp, and on the thirsty overlanding tracks. He had been told of their habit of differing on every subject with fierce arguments and fiercer fights, and he realised that beneath this outer garment of hostility there burned the fervent fires of a mateship, sincere, unselfish, all-giving, that would endure for life. And so he had a kindly grin as the two old "hard cases" disappeared in the scrub.

When another day had passed the trooper, from the station verandah, was astonished to notice, in the figure of a solitary swagman swinging down the track, one of the quarrelling mates, Spike Mahaffey. He watched the old man plod sturdily towards the shanty, saw him angrily drop his swag on the beer casks near the gate, and then enter the bar, with erect shoulders and defiant head.

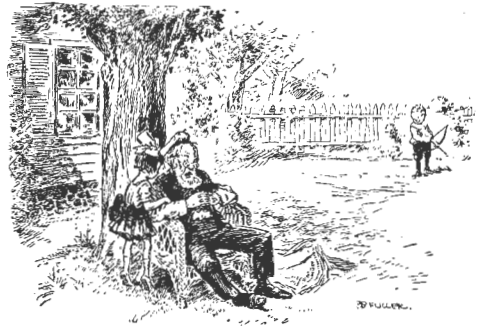
The trooper sauntered to the hotel, and, entering the bar as Spike had finished a lonely drink, asked a simple question.

"In for rations, Spike?" he inquired.

"No," answered Spike in angry tones. "I'm makin, for Condobolin. Me an' Bogan ain't mates no more."

"What's happened?" demanded the publican in amazement. "Why I thought you two'd stick together all the rest of your lives."

"So did I," assented Spike savagely. Then in strident tones he proceeded to further explanation. "I'd a stuck ter him all right only he developed er sulky tem-



"Don't move, Grandpa, we're playing William Tell."

per. One thing I can't stand is a bloke wot sulks. We always had our arguments, an' Bogan could hold his own, an' he always tried fer the last word. That's why we fought so much, but now he's got cranky over something an' wouldn't even speak a word to me."

"What upset him?" asked the trooper.

"Darned if I know," replied Spike in irate disgust. "When we gets ter th' camp er Winsd'y night we had er feed an' turns in. Nex' mornin' I'm up at daylight, boils th' billy an' sticks er pannikin er tea erlongside him an' tells him ter get up. He has th' blankets up round his beard, an' though I shakes him an' he has his flamin' eyes open he don't say er word. I offer him er bit er chuck again, but he just lies, narked-like, there an' don't say er blarsted word. I tries ter start a argument, but not er sound from him, so I rolls me bluey and gets. He can have it on his own if he wants it."

The trooper walked from the bar with a thoughtful mein. Straight to the stables he went, saddled his horse and rode unhurriedly to the camp of the parted mates at the old diggings.

He entered the rude, desolate hut, and found Bogan lying in his bunk, with the dirty grey blanket pulled up about his whiskers.

And he found why Bogan had become sulky and had refused to argue with his mate.

Bogan was dead.

Some people think they have experienced religion when they only had a bilious attack. —Bishop Vincent.

The optimist is a man who has a good time wherever he goes, because he carries his good times with him.

WHERE SPORT AND PLEASURE DWELL

A DAY'S SHOOTING IN SOUTHERN CALIFORNIA

By ERNEST MCGAFFEY

WHEN the cooling winds come in at the approach of autumn the many wild-fowling enthusiasts of Southern California commence to get ready for the opening day of the sport, which is on October 1. Guns are overhauled, oiled and made ready for the shooting, shells purchased, and preparations made for the arrival of the birds. The shooting begins here with an early flight of sprigs, as they are locally termed, or pin-tail ducks, accompanied by a number of cinnamon teal, which have bred in the California marshes. After these come the mallards, green-winged teal, and a later flight of sprigs, and then come the canvas-backs, and redheads later on. Some widgeon, spoonbills and blue-winged teal are mingled with the arrival of these birds, and in some portions of the country the later flights bring in almost countless thousands of wild fowl. Wild geese also come in, the "honkers," or Canada geese, and many white-fronted geese.

Decoys are used in nearly all of the shooting, some of it being over live wild mallard decoys assisted by English "call" ducks, but most of it is over flocks of wooden decoys. The "blinds," in front of which the decoys are placed, are built of stout wooden timbers, entirely concealed by the tall rushes, called "tules," which grow to a height of twelve or fifteen feet and as thick as the hair on a dog's back. As the ducks come in to the decoys the shooters wait until they are fairly over the open water before they fire, as to drop a duck in the tules is to lose him ninety-nine times out of a hundred. No retriever can possibly penetrate this mass of vegetation, and no duck-boat, however light, can force its way into the solid banks of rushes.

Late in October my friend, "Ceph" Salisbury, and I took a flying trip into the marshes along the Alamo River, in Imperial County, in Southern California, with a view to trying for a few birds from

the latter end of the early flight of sprigs. We knew that we were rather tempting the Fates, for the best shooting had passed with the arrival and departure of the main flight. But we were keen to feel the cool marsh morning winds fan our faces, and to test the uncertainty which lay before us. At any rate, we would see "the dawn come up like thunder," and get a glimpse of the water where we had enjoyed such rare sport the year previous. We were already in the vicinity of the river on a business trip apart from shooting, and it only took us four hours' run with our automobile to reach the locality from where we intended to shoot. We bought our shooting licenses from the officials of the Automobile Club of Southern California at El Centro, procured shells, and with guns and shooting clothes packed in the back seat drove down to the camp where we had arranged to stay overnight.

There were no hunters there. The main flight of sprigs had come and gone, good shooting had been had, and the wise hunters had gone back home to wait for the mallards, the later flights of sprigs, and the canvas-backs and redheads. But there are always possibilities in duck-shooting. A sudden storm to the north, a drive of snow and sleet in the lakes and marshes higher up the coast might send an advance guard, at least, of flying pinions down to where we would be in the morning. Anyway, anticipation is the very life of wild-fowling, and we were quite ready to accept philosophically whatever the future had in store for us.

At 3.30 a.m. our alarm clock rattled its metallic signal, and we were up and out of our cozy cots as soon as its warning sounded. Hastily donning our shooting "togs," we made coffee and fried some bacon and eggs, and partook of a hearty breakfast before starting for the place where our boat was tied up. The stars and moon were still ablaze in the skies, and the



Counting the Spoil.

The figure in the centre is the writer of this article, Ernest McGaffey.

effect was kaleidoscopically brilliant. Every constellation to be named seemed aglow on the page of darkness, and it might have been midnight, so radiantly did the heavens reflect from star to star the phosphorescent glitter of the night.

The rushes stood like black walls of ebony as we walked down to the boat-landing and stepped into our light steel duck-boat and took the paddles to row out to the "blind." For the most part, there was a profound silence as we dipped the broad paddles into the dusky water and propelled our narrow craft out into the marshes. Occasionally the complaining call of a coot broke the stillness, but there was not a breath of wind, not the semblance of a breeze, to indicate the possibility of a storm to the north. "Looks like a still day," said "Ceph." Not much chance for the ducks apparently!" A gaunt blue heron flapped lazily up from a muddy bar to the right, and a fluffy owl swung suddenly past with a velvety noiselessness of movement.

We paddled across the main waters of the marsh and wound up into a narrow lagoon that pierced far down the lines of lofty tules. We had already taken the

directions to the "blind" from where we expected to shoot, and as we neared it we peered anxiously to determine its location. A couple of wooden decoys had been left to plainly mark just where it lay, and we soon found these and also the "blind." In the entrance to it, where we intended leaving our boat, we found a second boat, a wooden one, loaded down heavily with decoys. There were also a lot of decoys stowed up on the platform of the "blind." It always pays to set out a goodly number of wooden decoys, as this makes the chance for getting shots much better.

I took the wooden boat and made two trips to the front of the "blind," setting the decoys down at intervals, and stringing them out to cover as much space as possible. Sometimes it is more effective to bunch them into almost a solid flock, with a leader out ahead, and arrange the birds in a sort of symmetrical V-shape. Canvas-back and blue-bill decoys are exceedingly effective placed thus, but in sprig shooting the irregular method of setting out the decoys works very well, and is not so laborious. I got them all out at least a half hour before daybreak, and we put the wooden boat back of the "blind"

and ran our light steel boat in the entrance to the "blind." As a rule, in this marsh shooting, we do not retrieve the dead birds until after the shooting is over. The heavy banks of tules keep the ducks from floating away, and the chances are always that you will miss shots if you leave the "blind" during the flight.

The "blinds" are built high up over the water, the wood being concealed among the thick rushes. A comfortable seat is arranged in the back, and the high position gives a commanding sweep of the marsh in all directions. We squatted down on the seat, "Ceph" keeping a sharp lookout to the right and I to the left. "Mark right,"

edge of the decoys. As he rose on my side a charge of sixes laid him out on the water before he had risen more than three feet from the surface. Then a bunch of green-winged teal came by from my side, flying like bullets, and with no intention of dipping to the decoys. We fired four shots, and only succeeded in stopping one bird. Teal are our swiftest flying birds here, and many more misses than hits are scored on them. A pair of sprigs next came by, high up, and apparently not intending to stop and investigate. Four shots at them brought down one bird, but the other duck sheered off untouched. This dead sprig dropped directly in the little wooden boat



Decoy ducks at a shooting camp on the Alamo River.

said my companion in a whisper. Neither of us moved an inch, and presently the swish of wings denoted the incoming of a flock of wild-fowl. Nine sprigs were in the bunch, and they circled only once and then came in, dropping beautifully to the decoys. As we rose they began to climb, not having touched the water. We got five with our four barrels, "Ceph" dropping two at a cross-shot with his first barrel.

This was a good beginning. One of the sprigs was showing signs of life, so a second charge was sent after him to make assurance doubly sure. Soon after this a single bird dropped in just at the

behind the "blind," so it was already retrieved for us:

Another small flock of sprigs dropped down towards the decoy about half an hour later, but, flying just above the tules, they gave us a tantalizingly close inspection, but refused to get out over the open water. We heard a fusillade shortly after from a "blind" to the north, which gave us reason to believe they had given some other shooters an opportunity. After this there was a lull in the flight, followed by two single birds coming in near enough to give us shots, and both of which we were lucky enough to score on. Duck-shooting is a



"Waiting for a shot." Inset shows a man in a canoe entering one of the "blinds."

science in itself, and good shots at other game will often be found wanting when it comes to making a good score from a "duck-blind." Unless a man has had years of practice in this particular line he is apt to "fall down" woefully in this kind of shooting.

He will find that birds of the same species may fly faster at some times than they do at others; that he will get all sorts of curious angles of flight from where he is perched, and that ducks can twist and dodge when they are alarmed so that they often present the most difficult shots imaginable. We sat glued to our "blind," not exchanging a word except when birds came in sight. One of the cardinal rules of duck-shooting is immovability when the birds are flying. The slightest movement will be seen by them, and it is then good-bye to all chance for a shot at that particular flock or pair, as the case may be. At about nine o'clock a flock of five came in, and we got three out of the bunch. A little later three birds came past, and we

garnered two of them that dropped in the open water. Several times we could have had shots over the tules, but we did not take any desperate chances in that way.

At ten o'clock the flight had practically ceased, and we decided to quit. I took the little wooden skiff and picked up the decoys, while "Ceph" waited just outside of the "blind" for a possible bird to swing around the point and give him a shot. He got one lone sprig in this way, and that was our last of the day. The evening flight is not disturbed at this camp, and this makes the marshes a resting-place during the afternoon and evening, and improves the morning shooting very perceptibly. The limit of birds for a day is twenty-five, but we had not got even one limit between us. However, we had not been disappointed, and had thoroughly enjoyed our morning shoot. The birds were young and in remarkably good condition, having fed on the barley fields which lay for miles in all directions about the marches.

WHERE THE BROWN MAN BEATS THE WHITE

STRIKING EXAMPLES OF NATIVE INGENUITY

HOW LONG-DISTANCE SIGNALS ARE TRANSMITTED

By FANK G. EARL

IT always puzzles the white man to understand how messages and news are sent long distances over jungle-covered country and across miles of sea by the most primitive savages. That it is done, and done every day, there is no question. It is accomplished, moreover, so much as a matter of course that when asked to explain how he does it black brother quite fails to understand what you mean.

In New Guinea, in spite of the fact that there are hundreds of different tribes scattered throughout the densely jungled and flat country of the western division and the mountainous interior, news is sent from place to place with wonderful rapidity. Let a white man, be he trader, visitor or Government official, land on the coast or sail up a river, and his coming is known to the natives in distant villages almost immediately. Let there be a tribal fight, either with or without the following cannibalistic feast, and details are quickly known throughout the surrounding country. By the same means, whatever they are, those guilty of attacking another tribe, or of raiding a village, are quickly warned of the arrival of the avenging Government official and his black police.

In bare, hilly country, such as is found in parts of South Africa, where there are vast stretches of grass-covered hills with no trees to break the line of vision, the natives "cry" the news to one another from hilltop to hilltop, passing the word along with marvellous speed and accuracy. Their ability to thus throw the voice for distances measured in miles is a secret, though they seem unable to see it in that light, or to understand why the white man cannot do the same thing. Though it seems more easily understood when accomplished across clear spaces such as these, the ques-

tion still arises as to how it is done through jungle-covered country, where everything is against clearness of sight and hearing.

It is well known that "drums," in the form of split and hollowed tree trunks, tom-toms and suspended slabs of certain woods, are used to send messages, as well as to summon the warrior to the fight, the feast or the dance. Long and detailed messages are sent, and answered, by means of striking these "drums" with wooden clubs, the deep, booming notes, beaten out at irregular intervals, suggesting a crude form of Morse code.

The Islanders throughout the Pacific and in Torres Strait all use the *tuturu*, or conch shell, as a trumpet. The "boo" produced by blowing through one of these shells can be heard clearly and distinctly for a distance of ten miles or more on a clear, still night. The same "code," or something like it, is used on the *tuturu* as on the "drum." Messages are sent from passing luggers and *bech-de-mer* cutters to the natives on islands miles off the track. Passing boats "speak" each other by the same means, exchanging the gossip of the last village visited or spoken to. The effect of the booming notes, softened by distance, sound weirdly strange across the water through the soft, warm darkness of the tropic night.

The writer once had an experience which left him wondering. It was during a night run through Torres Strait. The wind was almost dead and the lugger barely moving through the water, when the "boy" at the tiller suddenly stopped talking, and, after calling for silence, stood for awhile listening. Then, turning to where I sat, he informed me that the captain of an island boat out from Thursday Island had letters for me, and was coming over to deliver



Island Scenes.

(1) The captain of the boat which signalled through the night and brought the letters. (2) Beach at Thursday Island. (3) Medigi Bay, Darnley Island.

them. He then sang out something to one of the other "boys" for'ard, who, a moment later, sent out an answering message in a series of long and short "boos," blown through the *tutute*. I was quite unable to hear anything from the other boat, and my "boys" seemed unable to understand why I questioned them on the matter. They apparently carried on a conversation with the invisible island boat for some time, breaking into laughter and conversation every now and then after short periods of listening. Finally I detected the faint and softened sounds coming from somewhere across the darkness. Gradually they became louder and more distinct, till, an hour and a half after the first message had come through, I managed to make out the dim loom of the sails of the island boat

some fifty yards to starboard. I heard them put the dinghy overside, the sound of the oars in the rowlocks, and a few minutes later I was handed a packet, which, on being opened, I found contained the letters addressed to myself. How did the "boys" on the island boat know we were in the vicinity, or even at sea at all? How did they know that I was on board? Other men have had similar experiences, but they all pass off the question as to the "how" of it by saying that "it's native fashion."

Messages have probably been sent by smoke signals from the time man first knew the use of fire, and are still sent by men of all colours in every part of the earth. The glow of fire is used at night by the savage to warn or to call others, and

by blanketing and exposing the glow for long or short periods messages are sent after the manner of the modern signalling lamp, which, after all, is but the improved and up-to-date version of the idea.

To-day a knowledge of the use of flag signalling, both Morse and semaphore, is becoming fairly common among the "boys" on the pearling luggers, *beche-de-mer* boats and other vessels working in the waters of Northern Australia. The Government teachers in some of the island schools teach the young natives the use of the flags as part of their everyday school work. On Badu Island, lying between twenty and thirty miles north of Thursday Island, the Government installed a heliograph for use during the time the war was in progress, and I have seen a Badu Island boy of

about fifteen years of age call up the station on Good Island, next to Thursday Island, send the message he had been given, and receive and write down the answer.

It is no uncommon sight now to see a native, wearing nothing but his red lava-lava and carrying his long, three-pronged fish-spear, drive the latter into the rotten coral on which he has been fishing and start to semaphore with his arms to some passing island boat, which has seen him and "rung him up" by a long deep call on the *tuture*, or conch shell.

The uncivilized black man scores over us in being able to broadcast his news without the aid of our complicated plant, gear and wires. His "wireless" is primitive and crude, if you like, but it gets there all the same.



At Eventide.

A view from Neilsen Park, Sydney Harbour, looking towards Watson's Bay.

An inordinate, over-vaulting ambition, greed, selfishness, jealousy, envy—these are the enemies which rob us of peace, comfort, happiness and power.

* * *

Profits can be made in only one way; losses may creep into business in a thousand ways.

Shun everything which warps and twists your ideals, which attempts to let down your standards, as you would pestilence itself.

* * *

The greatest philosophy in the world is that which returns love for hatred, kindness for unkindness, a smile for a frown, a favour for a kick, a kiss for a blow.

AUSTRALIA'S FARTHEST NORTH

THE LAND OF MYSTERIOUS SPRINGS

By FRANCIS BIRTLES

THESE are peculiar spring waters at Cape York, which rise and fall with the tide. There are also great, rushing streams running down from the tops of the mountains. I am of the opinion that these waters have their origin in the 14,000-foot-high mountains of New Guinea. Vast soakages extend right underneath the sea-bed, and force a passage through the conglomerate rocks of the Australian mainland. This would account for the Gulf of Carpentaria regions being the best watered sections of all Australia. Maybe, too, that from this enormous soakage Australia's sub-artesian and artesian basins have been formed during thousands of years.

Striking a general average, and starting in North Australia, the waters around the Gulf of Carpentaria are on the surface. Further inland sub-artesian waters are tapped by sinking a few hundred feet, while nearer still to the interior artesian waters are obtained at depths of thousands of feet. After passing under the Great Centralian Ranges artesian waters are once more obtainable, and further south sub-artesian water is found as the elevation of the land becomes lower. Most of these southern waters are charged with chemical deposits, seemingly as though having drained through for a great distance. A branch of this soakage will, I believe, later be found within reach of the middle sections of the Port Augusta-Kalgoorlie Railway. The Nullabor Plains will then be opened up for stock-raising purposes. The general strata of Australia are such as to permit soakage from New Guinea to travel south along a very deep foundation layer of bedrock extending under the MacDonnell Ranges. Under a water scheme similar to that in operation between Perth and Kalgoorlie pipe lines could be connected between waters conserved in New Guinea, and run by gravitation to the dry portions of Central Australia.

Fishing With Moses.

Two energetic disciples of Izaak Walton, we stood, blackboy Moses and I, on the rocky edges of Cape York.

On the deep-blue, transparent waters big sharks idled by, followed by shoals of greedy fish, always ready to grab little tit-bits left over from the sea monster's meal. Moses was busily engaged hauling out "plenty big fellah, old man schnapper." Baiting his hook with pieces of octopus, and rubbing the line with juicy, smelly green weed to lure the fish, he would cast out. A couple of vicious tugs from both ends of the line—and a fine fish would be flopping about on the rocks.

With rod, line and reel I whipped the fast-running channel current. A bang, a swirl and a gleam of white faded downward into deep, azure depths. Missed him! A giant barramundi!

I payed out a hundred yards of line, letting the live pilchard bait drift downstream. The line swept up with a swish against the current. On went my reel brake, and instantly the tough rod bent into bow shape. The line paused, slackened, and then came rushing inshore. Rapidly I reeled up the slack; another pause, and then, suddenly a gleaming bar of silver shot upward against the blue sky. A kingfish! Down he dived, fighting stubbornly with angry shakes of his bulldog head. I reeled him in close to the rocks, but in deep water. My before-breakfast hunger overcome my sporting instincts. Boy Moses was called up with a 44 rifle in his hand. I pulled the trigger, and the smack of the bullet stunned the fish.

Fishing With a Rifle.

Whilst this repast was cooking underneath the hot ashes I wandered down to the shallow waters on the beach. Here I shot some large tiger mullet. In the meantime Moses brought in a supply of edible rock oysters, and two small pearl oysters,

fastened on to a sea-worn copper bar.

The interior of these latter was of a semi-transparent emerald green, and would cut into unique ornaments. It may be possible to cultivate large oyster beds on copper plates or copper scraps and turn it to commercial advantage. The galvanic action of fast-running tide waters would assist the precipitation of the deposits of lime, salines, etc., in connection with the copper.

After breakfast we strolled along a sandy beach and came to a turtle track, at the end of which "Dinkum" sniffed about and then started to burrow. We lent a hand, and two feet down we found 140 eggs, tough skinned, of the size of ping-pong balls.

and suddenly draw it in, and then the agonizing weapon is driven home. To enjoy this sport of hunting stingarees to the best advantage it is advisable to wade out with as little clothing on as convenient. The hunter gets a better thrill. With our stout wire-pronged spears we wandered out into the shallows.

Encounter With Stingaree.

Moses struck the waters. Up leaped a startled stingaree and hydroplaned rapidly along the surface toward me. Then, diving, the half-ton mass of winged animation came to rest on the bottom and frantically dug into the soft sand. Viciously I threw my spear into the tough hide, and instantly the thing charged at my bare



"Why, you told me yesterday you didn't think it was necessary to have a detective to look after the wedding presents."

"True, but since then I've seen the bridegroom's relatives."

On the incoming flood tide swarms of mullet seethed in the tidal channels. Barramundi and kingfish darted in and out on missions of murder. The sinister fins of sharks hovered roundabout.

Now that our food supply for the day was assured, we sought sport, looking for sting-rays. A "stingaree," as it is commonly called, has on its back a ten-inch spike full of barbed points. The long, whip-like tail will lash around its victim

legs. Yelling, I side-stepped, jumped and fell over backwards in the luke-warm waters.

The stingaree was now streaking all out for the sky-line, the spear standing up like the periscope of a submarine. The fin of a big shark bobbed up, and the monster hungrily followed its prospective victim.

Our next move was along the banks, and before we had gone far Moses gave the alligator sign by snapping his two fingers

together. An old-man alligator was watching a flying foxes' camp. He was floating underneath a big mangrove waiting to grab a "fox." He would not have long to wait. They were continually fighting and falling down from aloft. Steadying my rifle against a tree, I took a sight between his eyes, which looked like floating bubbles. Whack! With a grunt and a spring clean out of the water he half turned round, and went below, savagely stirring up the muddy bottom. Frightened fishes darted madly about and became stranded on the mud banks.

A wild fruit tree, the wongi, tempted us to eat, and while doing so I was able to note something of the character of Moses. First, he looked for the good fruit at the top of the tree, showing that he was ambitious. The average aborigine looks first at the size of the tree trunk, and searches on the ground for the fruit. If the fruit is high up he is too lazy to climb, and cuts the soft wood tree down with his Government tomahawk.

One of the native dogs accompanying us suddenly let out a weird yelp, and Moses promptly scampered up the wild fruit tree. I scrambled to the top of a stump, and the dog, still howling and with eyes glaring and teeth snapping, tried to follow. Then he tried to stand on his ear, did a fancy fox-trot, rolled over and over, and finally bolted into a forest scrub. I thought that it was some kind of disease, such as hydrophobia, that had seized him, but the canine had probably run against a stinging tree. On my boy's advice, I stayed up the tree for about half an hour, and, to while away the time, I made some photographic studies of an orchid growing on a nearby beach. "Dinkum," our dog, came along in a hurry, pursuing a big brown iguana, which clambered up the wongi tree. The iguana sidled round and round the tree trunk, keeping on the opposite side to the delighted Moses, who tried to grab the reptile by the tail, but received a whip-like crack across the face. The iguana jumped to earth, and Dinkum ended the argument after a tough battle. Moses lovingly fondled the "gohanna's" fat ribs and tail. He was going to dine well!

Among Tropic Palms.

On a beautiful, swift-running creek we camped for our midday meal. Tropic palms stood high overhead against a blue sky. Gorgeous butterflies floated or flitted from scented scrub or flower.

Moses had grilled "goanna" on his menu. As he sat at his meal I noticed a shiny object on the sole of his foot. It was one of my brass drawing pins. He did not know it was there.

After the meal was finished my attention was attracted to some huge yellow flowers, which opened and shut as soon as the sun shone or was clouded over. Some unknown chemical must be in these plants, which have a great affinity to light. This same chemical will probably be found in the night moths, which are not as foolish as they seem to be. They are attracted to a light much the same as a falling object obeys the laws of gravity, only in a less degree. If science can harness or manufacture this chemical we will have a new source of energy, the motive power of which could be the sun's rays or artificial light.

Up the creek there was "something doing." Little clouds of dust arose, and small birds chattered excitedly. A green snake and a black one were settling their political differences. The black snake disappeared inside a hollow log, and the green one slid into the shallow rushing waters, where he stayed, with his head just above the surface. Evidently Nature's cure for venomous bites.

From under a shady bush there came a rustling of wind among dead, dry leaves, and the squealing of young birds and savage hisses. The mimicking bower bird was at play. The call of a scrub turkey lured us into the jungle scrubs. "Dinkum" rushed around to pick up the scent. He barked, and out of the dank undergrowth a scrub cock hopped up.

Home of the Scrub Turkey.

Underneath we could see a big mound of earth 20 feet in height and ninety paces round. This had been made by the wild scrub turkey. The eggs are laid one each in a series of four-foot-deep burrows, deep enough to be well buried away from rooting pigs or gormandizing "goannas." These eggs are of peculiar interior. When

the chick is hatched by the heat of the decaying vegetation it is to be found in the top of the shell. The three parts underneath are the remainder of the egg. On this the young ones feed until they are strong enough to dig their way up and out of the mass of earth, leaves and sticks overhead. By this time they are quite capable of flying, and can fend for themselves.

High up on a smooth-barked, and, therefore, python snake proof tree, was a big collection of the colony birds' nests. Mobs of birds fought and clamoured for a foothold. Pieces of nest continually drifted downwards, only to be caught by a covetous neighbour. Young ones fell out of their lofty domiciles down on to the rotting heaps of filth at the base of the tree trunk. There they perished. For scores of years this tree has been used. Iguanas visited here by day, and dingoes prowled round at all hours. A scrub wallaby tore past,

and a nigger's dog went by in silent pursuit a few seconds later. Over a patch of "sneeze" grass the marsupial coursed. The dog, following up the ground trail, suddenly struck this patch of dry grass, slowed up and sneezed and sneezed. The wily wallaby, well versed in bushcraft, had beaten his pursuer.

Moses had his ear glued against a hollow mangrove stump. Stepping backward, he grinned, and then yelled "Yakki," as he trod on a bristly captive porcupine which he had left on the ground. With a hard lump of wood he burst the stump asunder. Thousands of small, fly-sized bees were crawling over a sticky conglomeration of honey. It was a sugar-bag bees' nest, well beloved by outback white folk and aborigines, but not by me. I had seen the bees gathering up honey from sources which caused me to turn from the product in disgust whenever I saw it.

HOME LONGING.

*I never watch the sun set adown the Western skies
But that within its wonderness I see my mother's eyes;
I never hear the West wind sob softly in the trees
But that there comes her broken call far o'er the distant seas;
And never shine the dim stars but that my heart would go
Away and back to olden lands, and dreams of long ago.*

A rover of the wide world, when yet my heart was young,
The sea came whispering to me in well-beloved tongue;
And, oh, the promises she held of golden lands a gleam
That clung around my boy-heart and filled mine eyes with dream;
And Wanderlust came luring me, till 'neath the stars I swore
That I would be a wanderer for ever, evermore.

A rover of the wide world, I've seen the Northern lights
Aflashing countless colours in the knife-cold wintry nights;
I've watched the Southern Cross ablaze o'er smiling, sunny lands,
And seen the lazy sea caress palm-sheltered silver sands;
Still wild unrest is scourging me, the Wanderlust of yore,
And I must be a wanderer for ever, evermore.

And yet I see the sun set adown the Western skies,
And glimpse within the wonderness my mother's pleading eyes;
And yet I hear the West winds sob softly in the trees
That vainly cloak her broken call far o'er the distant seas;
And still, when shine the dim stars, my wander heart would go
Away and back to her side, and dreams of long ago.

EDMUND LEAMY.



THE MISER'S MONEY

By DOUGLAS NEWTON

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BOYD MUIR, the composer, paused at the piano a moment after the last notes of his newest song had died down. Then he turned and saw Cyprian Xystus, that extraordinarily calm and polished young man, near the door, with his coat and goggles on. Thecla, Cyprian's sister, also stood ready for a night ride, and in her hand she bore garments which the musician recognized as his own motor-ing gear.

Boyd Muir made a grimace.

"This is too bad," he said. "I can't possibly be a burglar to-night. Do you know the name of this new song? It's to be called 'The Pure of Heart.' I can't rush off and plunder some one after that."

"Disgusting, isn't it?" laughed the calm Cyprian. "To think that after your ballad you've got to do a little burglary. Still, if you want to do any more ballads you've got to have three meals a day, and live in a decent house, and know quite nice people like Thecla and me. And the only way we can have money is to take it from some one who has rather more than any-one should decently have. Hop into your coat, my child, and come out on the loot."

"I'll loot anybody to-morrow, but not to-night—not after writing that virtuous little song."

"You'll do it to-night or never, *mon enfant*. There is no to-morrow in this case. To-night is the one night of the year when a thin, most unpleasant, but wickedly rich grocer can be relieved of his ill-gotten profits. It is all arranged; the plan cannot be altered."

A suave Chinese servant came forward. He helped Boyd into his outdoor clothes, and then with a few swift touches of his deft fingers he changed him from a young and attractive man into an oldish and unpleasant fellow. He used grease-paint and false hair on the persons of the other two, so that Thecla, the beautiful, became a sour-faced drab of a girl, and Cyprian was turned into a bilious-looking and pug-nosed person of a type rather like a prize-fighter down on his luck.

The transformation was quite remarkable. These three young people, living an indolent and graceful life of ease in the sphere of the smart West End, had characters and charm that made them a host of friends among the best people in town, who never suspected they were really burglars. Now, under the fingers of Sun Yat, they had become unrecognizably ordinary and vulgar persons.

When the transformation was finished they went to the garage, and, leaving unostentatiously from the back door of the Kensington house, drove their car from that quiet street through the dusk of the night into the depths of the country.

* * *

As they rushed through the night Cyprian said:

"We didn't want to interrupt the flow of genius, so we haven't talked to you about this job. But Thecla and I have been doing our cleverest in the matter for the last two weeks, and we've got it all planned perfectly. It'll be an excellent coup if we bring it off, as, of course, we will. The job will be a soft one; there

will be piles of minted money in it; and a food hog of the worst kind will be hit in his tenderest spot—that is, his money-bag.”

“Another profiteer is the victim, then?” said Boyd Muir.

“My dear child,” said Cyprian, who was if anything three years younger than the man he called his dear child, “it is always a profiteer. We never loot any other sort. For thieves, we are, on the whole, rigidly honest. Only the profit-mongers, those who have robbed legally, are robbed by us more or less illegally. Please remember that; we have our strict code.”

“Who is the profit-monger to-night?” asked Boyd Muir, no longer a musician, but a man as keen on excitement and adventure and plunder as his companion.

“Our victim has the horrid name of Rufus Swinscow. He has made a pot of money out of charging ghastly prices to the poor for the food they had to buy to live. He lives a little way from the town where he did his beastliness, in a lonely country villa near Monkton. He went there for two reasons, first, he wanted to get away from the people he robbed, for fear that one day they might mob him, or, what is worse, might have shamed him into helping them in their poverty; and that latter is the second reason for his hiding away in the country—for he hates the idea of parting with his money. He is a miser. He locks himself up alone in that house with his filthy cash.”

“What?” cried Boyd Muir in surprise. “Do you mean to say that he keeps his money at the house?”

“Yes, rather! He is one of that sort, the sort that burglars love.”

“In spite of the fact that banks and safe deposits and all that sort of thing are in existence?”

“Again, rather; Friend Rufus is of the now almost extinct school, suspicious of banks and safe deposits. He doesn’t trust ’em. It’s really his greed. He can’t bear the thought of having anybody else touching his money. He wants it all himself; he wants to have it always by him, so that he can finger it and count it up and gloat over it.”

“Doesn’t it occur to him he might be robbed?”

“It does. For that reason he has one of those big, burglar-defying safes, a brute of a thing. It nearly broke his heart to spend money on it, but he did; and with that, and some large-sized pistols and burglar alarms, and his greedy self to look after the lot, he thinks his cash more safely housed than any other in the world. We are going to prove that Rufus, like other people, is human and prone to err.”

“How much can we steal from him?”

“Steal is a crude word; say—say, appropriate. As far as we can find out, it should be more rather than less than six thousand pounds—all in bank notes, too, my child.”

“But can the man be such an idiot—I suppose he has a host of servants, though.”

“One,” Cyprian chuckled. “Did you ever meet a real vinegary miser with a love of servants in his heart? Misers don’t love servants. They are sure that servants are dishonest; and then servants, even of the most-starved kind, eat food. Misers loathe having people eat food, because food costs pennies. So Rufus has picked out a servant who suffers from lack of appetite, a poor, spiritless, downtrodden creature. And even she isn’t with him to-night. She received a letter this morning saying her mother was dangerously ill. She left about midday to travel to her home village, ninety-five miles away from Monkton.”

“You sent the letter, Cyprian?” said Boyd.

“You don’t win a prize for guessing that,” smiled the calm young man. “Of course, I did. I went by car to the mother’s village yesterday to post the missive. I hate to upset the girl’s feelings, but really it is better for all concerned that she should be away to-night.”

“Then there’s only Rufus?”

“And the safe, and the safe is a real brute,” said Cyprian. “But I have a way with safes, and have brought the means to reason with it.”

They drove on in silence for a long time; then the calm young man said cheerfully:

“Duck your head,” my child. The branches will spoil your beauty if they hit you. We are driving into the heart of this wood. We are near the home of Rufus.”

It was not at all difficult to get into the home of Rufus Swinsecow. Part of the charm of burglar alarms, as Cyprian pointed out, is that one always knows where to look for them. These burglar alarms were of the kindergarten school; a baby burglar could work them. Rufus had grudged spending money on the good kind.

They got into the house through a kitchen without causing the householder any distressing shock by ringing his alarm, and the three of them quietly made their way to the morning-room, where the big safe was housed. Soon they were regarding the awesome thing in the bright, shaded light of an electric torch.

It was a formidable-looking safe, not quite of the latest pattern, but a thing that did, all the same, look likely to break the heart of industrious burglars. To Boyd Muir it looked absolutely impregnable.

"We'll never get inside that," he whispered, "even with the best and finest tools, or even with explosive. Unless you know the combination of that lock I can't see us breaking into it."

"I haven't the slightest idea what the combination is," smiled the cool young man, and he lifted a dispatch case, ridiculously small to contain burglary tools, as apparently it did. "As for tools, only the dullest burglars use 'em now. The brightest of us use science. A little applied chemistry—that's all we need these days."

He took from the case a pair of gloves of singular, asbestos-like fabric, a stone-ware jar and a large hard-glass syringe.

"Keep clear of this, Boyd, my child," he said. "It is something up-to-date in acids, and warranted to eat its way through anything, whether it is flesh and bone or steel or cheese. It will make Brother Rufus's safe look very sheepish. Oh, and keep your nose away, too; its fumes, even, are corrosive."

He slipped a mask over face, nose and eyes as he spoke, and then unclamped the cork of the strange bottle. As he lifted the stopper, the slight fume of a powerful and active acid appeared. He plunged the syringe into the neck, and filled it with a long, steady pull. Lifting the instrument out carefully, he first touched the brass knob of the big safe with a bead of fluid hanging to the nozzle of the syringe.

"Watch the acid," he whispered.

The brass knob began to smoke. A fume of acid appeared over that spot on the handle the drop had touched. The bright brass became shot with colours, green and a deep purple, and then a dry sort of yellow. Then the affected surface bubbled and cracked, and the veneer of brass on the handle split up into a number of small particles. Even as they looked, these particles vanished, becoming a sort of yellow mud on the surface of the safe handle. And in a moment, when all the acid had evaporated, there remained no more than a layer of yellow dust where the brass had been.

* * *

Cyprian touched the spot with his gloved finger, sweeping the brass dust away, and Muir saw that the powerful acid had not only eaten through the coating of brass, but had corroded the strong steel of the handle beneath the veneer to a fraction of an inch.

"Useful stuff to have in an emergency like this," said the calm young man. "It's the last word in safe-breaking. We ought to get through the three-ply steel of this door in about an hour."

He lifted the syringe and sprayed the safe door, and immediately the door gave off fumes, and the paint on the surface began to bubble and run, and vanish in an astonishing way. Almost before he had emptied his syringe the paint had gone over a large square area, and the wet shine of corroding steel showed up in places.

Cyprian filled the syringe again and put it carefully down on a pad of the same material as that from which his gloves were made. He waited a full minute, and then with a swab he wiped off the corroded steel, and examined the deeply bitten surface of the safe door.

"Rotten stuff," he chuckled. "How these profiteers do rob each other! Rufus has been swindled. This is the softest, cheapest steel one can buy. We'll simply waltz through it."

As he spoke, he stopped and listened. Their hearts beating like pistons, in the intense silence of the night, they heard a cracked, sour and yet frightened voice, saying:

"Central! Central! Damn you, Central! Answer, quick! Central!"

Cyprian, who had lifted the syringe, put it down again very carefully and quietly. "Rufus," he said, "is at the telephone. He is calling up the police."

By a swift, instinctive movement, the three of them ran softly and quickly from the morning-room into the hall and toward the dining-room, where, obviously, the telephone stood. Even as they entered the hall, they heard the peevish, bitter voice say:

"Oh, you've come at last! A confounded time! A matter of life and death. Burglars, yes! In my house! You have my number. Yes I am Rufus Swinscow. Call the police."

Silently the three burglars were at the dining-room door. They looked in. A scraggy man, in a flappy red dressing gown and a nightcap pulled well over his forehead was at the 'phone. As he saw the burglars he dropped the ear-piece and began to lift a big revolver.

"Say, don't do that, old pal," said Cyprian in a prize-fighterish accent. "Lift it about six inches more an' I gets you—see." He waved a very intimidating-looking automatic. The grocer-profitier grew ashy, but did not attempt to lift his revolver. "Go an' take that narsty-lookin' firearm aw'y from that gentleman, Horace," Cyprian went on. "It's makin' 'im feel awkward."

Boyd, who understood he was Horace, went forward and took the pistol from the nerveless hand of the profit-monger. At that Rufus found his voice, and he said in a cracked tone, not as a threat, but in the hope that these rough-looking men would run away before doing him any harm:

"I've rung up the police. Let me tell you that. I've telephoned the police; they are even now on the way to catch you."

"They won't be 'ere for ten minutes—not even if they take a taxi," sneered Cyprian. "Get out of that pretty dressin' gown, old buck. 'Orace, remove the wig-wam on 'is head. Emily, that piece of cord."

"I warn you! The police will be here in a few minutes," began the grocer. But he got no further. His dressing gown and nightcap were torn from him. The rope which Thecla had produced was whipped round him. In little over a minute he was

bound and gagged, a cocoon of fear and rage. They carried him into the morning-room and put him down by the safe. With a word or two, Cyprian handed the dressing gown and nightcap to Boyd Muir, and the latter and Thecla vanished from the room. Even as Boyd pulled the door to behind him, in order to lock it from the outside, he saw the calm young man pick up the syringe and coolly begin to spray the door of the safe with the powerful corrosive acid.

Then he ran upstairs after Thecla. Thecla was stripping off her blouse as she mounted the stairs, and was undoing her skirt. She had already let down her hair—not her own glorious copper hair, but that of the wig that covered it—and it was hanging in a wispy disorder about her drab, painted face. All this he saw in the flash of his electric torch as he reached the first landing. She paused one moment on the landing to tug off her skirt; then with a twinkle of petticoats and uncovered ankles, and with a wave of a bare, round, beautiful arm, she darted up the second flight to the servant's quarters.

Boyd Muir found Rufus's room easily enough. It was the only room the mean grocer had furnished. He had not been in it five minutes before he was conscious of a noise outside the house—a soft noise of many men moving stealthily. With a suffocating emotion he thought: "They are surrounding the place." He waited in the darkness of the room. In three minutes there was a business-like knocking at the front door.

He waited until there was a sudden, snapping noise, as though some one were forcing in the front door; then he switched on the light, threw up his window and poked both his head and his revolver out of it.

"Who are you? What the devil do you want?" he shouted down to the group of men about the door.

"Who's that?" snapped a voice up at him. "Who are you? Whoever you are, we've got the place surrounded; just mark that."

"Who am I? Got the place surrounded!" echoed Boyd in a very good affectation of shrill rage. "Who am I? Are you mad? Did you wake me up in the dead of the night to ask me who I

am? Are you drunk? I warn you, I'll have the law on you for this. Go away. I won't have you hanging round my house at nights like this, disturbing me!"

There were exclamations of astonishment. The men near the door moved out to look at him. Boyd heard one mutter: "It's the old buffer himself, I should say."

An authoritative voice said: "I'm the police inspector, Mr.—Mr. Swinpig."

"My name is Swinscow," snapped Boyd. "You needn't be rude as well as disturbing."

"Well, whatever your name is," snarled the inspector, "you're wasting time arguing here. Have you got the burglars or have they bolted?"

"Burglars! Why should I have burglars? What have I got to do with burglars? What the blazes do you mean with your burglars?"

A gasp of amazement went through the men.

"You telephoned you had burglars," shouted the inspector.

"Me? Telephoned? About burglars? Ah, did I?" said Boyd with fierce cunning. "An' to pretend I telephoned for burglars is a neat way, you think, of letting real burglars into my house to get my money. I see through your game. You stay outside. Lemme tell you I'm armed. Let me tell you I have you covered, an' I'm going to get my servant to telephone for the police while I have you covered." He lifted his voice and shouted back into the house: "Rachel! Rachel! Run to the 'phone!"

That was too much for the inspector outside.

"Here, you, Mr. Cowpig, we've just about 'ad enough of this. Let me tell you you can't play about with the law like this. Here, Jim, show a light on me, an' let him see who I am." A light was shown. It exhibited an infuriated inspector and two obvious police constables. "Now let's 'ave done with this 'anky. Just you open this door, an' we'll get to the bottom of this."

Boyd, affecting to be impressed, but still cautious, said:

"But how do I know you are genuine? You've got a suspicious story about my ringing up the police—me that 'as been in bed an' asleep this four hours. How do—"

"Break in that door, Jim; seems to me he's a lunatic."

"No—no!" yelled Boyd. "Don't do that; it'll cost something to repair that door. My girl will open it for you. An' remember, I'm armed. Rachel! Rachel!"

* * *

The police were let into a hall flooded with electric light by an obvious servant—a slatternly, drab sort of spiritless woman, with a dirty dressing-jacket over her night-gown, and her bare ankles showing over shapeless boots. She looked as though she had been tumbled out of bed by their knocking—and resented the fact that her too-few hours of rest had been so broken into.

The inspector and the two policemen who entered the hall saw at the top of the stairs a half-dressed, scraggy, oldish man, who blinked down at them from under the rim of a nightcap. He wore a flappy red dressing gown, which he held close about his throat and chin with his left hand to keep out the night air. His right hand held an enormous revolver.

He refused to come downstairs. He said they might look like policemen, but he wasn't going to run any risk. He could talk with them quite well from where he stood; if they were burglars, as he suspected, he could deal with them better from his place on the stairs; if they were real policemen, they could appreciate his need for caution and no harm would be done.

The inspector, with rising anger, demanded to know why he had rung up saying there were burglars in the house. And the man in the dressing gown—that is, Boyd—wanted to know if he looked as if he had rung up, if his manner of receiving them was the manner they'd expect from a man who had rung up. Had he seemed pleased they'd come?

This was a rather obvious stroke, for he certainly hadn't the glad manner, and the inspector began to suspect he had come on a fool's errand, and had awakened a virtuous citizen (and no doubt an important one) out of his first sleep into the bargain. He said:

"Well, there ain't any burglars then, sir?"

"Burglars!" snapped Boyd contemptuously, and he waved his big revolver. "If there had been burglars I should have

done something with this, an' you would have noticed."

"And you didn't telephone?"

"Are you going to begin it all over again?" snarled the man on the stairs. "I've told you fifty times already I didn't telephone."

"Must get to the bottom of this—this hoax, sir," mumbled the now intimidated inspector. The servant girl at the door yawned and said peevishly:

"'Ow long are yer goin' to keep me 'anging round this door? I suppose you don't know it's draughty to the legs on a night like this."

The man on the stairs said bitterly:

"I don't mind you getting to the bottom of any hoax, as long as you do it elsewhere. Me and my servant aren't going to stand here catching our deaths of cold just because someone's made a game of you. You'd better go on home and get to the bottom of it there."

In time the inspector, baffled, mystified and inwardly enraged, did go home. He did not give way easily. He forced the man on the stairs to allow him to use the house telephone to try and find some clue to the mystery, but he got no satisfaction out of that. His snappy, official manner irritated the clerk at the exchange, who, while he insisted that it was Rufus Swincow's house and none other that had rung him up, became angry and confused things with sharp back-answers. The inspector came out of the dining-room in a worse condition than when he went in.

"It's my belief that that telephone clerk has muddled things," he growled. "We'll have something to say to that fine fellow in the morning. I think he was asleep and dreamed it all. Asleep at his post, the scoundrel!"

"I'm glad someone got some sleep to-night, anyhow," said the shivering servant tartly. "As far as I c'n see, nobody else is likely to get any while busybodies is 'anging round."

Personally we think it is nice for a man to be always cheerful, but it gets on our nerves for a dentist to sing at his work.

Girls who say they bob their hair for comfort remind us of the woman who didn't wear her wedding ring because it was so hot.

At this hint the inspector and his men departed. From his window Boyd saw the cordon round the house drawn off, and presently he heard a car chugging away in the distance. He went down to the door of the dining-room, turned the key and entered.

Cyprian, with his mask off, was busy at the safe. With his gloved hands he was breaking down the last thin wall of acid-rotted steel in the square of the door. As Boyd, and after him Thecla, once more in human garb, came in, his hand broke through into the safe, felt about and then came out again; in it was a thick, fine wad of notes. As he waved them, a muffled gurgle came from the bound figure on the floor, and they saw that the profiteer's face had become purple with rage at their success.

"How he hates this!" said Cyprian, nodding at the grocer. "I wonder what he'll have to say to the inspector and all the police force when he sees them in the morning."

* * *

A few hours later the three sat in the charming sitting-room of their Kensington house with a pile of some six thousand pounds in notes before them. The Chinese servant was clearing the table of the delicate wine decanters and the plates of their meal.

"Go to the piano, Boyd," said Cyprian languidly, "and compose a new march for us, a victory march, celebrating the triumph of clever people over mammonish grocers. A nice, stirring march, that will make your name."

Thecla stood up; she stretched her beautiful body in a delicious yawn.

"Compose a march if you like, Boyd," she said, "but I shan't stay. As far as I c'n see, nobody is likely to get any sleep while a busybody like Cyprian is 'anging round. Good night, or, rather, good morning. I'm going to celebrate the victory over grocers in bed."

Roberts had told his employer the old tale about burying his grandmother to enable him to see the footer match. It was hard luck on him, though, that just as he was about to pass through the turnstile his employer should be standing beside him.

IN THE HEART OF THE CONTINENT

HOW THE PEOPLE LIVE OUTBACK

By J. D. FITZGERALD

WE found ourselves on awakening from sleep in the comfortable car, drinking our morning tea in the centre of the Continent of Australia, right on the cross-hatched spot on the old maps where the ominous word "Desert" was printed. The word Oodnadatta was printed in large letters on the station. We were in view of the ends of the rails pointing north to the Port Darwin line, and south from Pine Creek. We were 688 miles north of Adelaide, and a few miles north of Brisbane.

Oodnadatta has a hotel, a store, some private residences and a school. The stature and faces of the children in the school were a guarantee of the healthfulness of this far-away place. Boys and girls looked in the pink of condition. The note of all the residents of the "desert capital" was of contentment. The stationmaster has had many offers of transfer from the "unendurable climate" of our arm chair geographers. He has declined them all. Miss Furber, the school teacher, has been two years in her present post, and has no desire to change. Indeed, if health be the chief desideratum of the human race, this lady gave ample evidence that her lot is a happy one.

The store is small, but we were told its business operations were not to be measured by the size of its departments. Rather must they be measured by an appreciation of the immense territory over which it operates. Probably, outside Texas or Siberia, this Oodnadatta store would have the largest range of custom in the world for a single shop. Through the hands of the storekeeper would probably run the business threads of a territory larger than Belgium or Serbia. It operates through the sparsest population in the world, too, though perhaps the Sahara Desert might run it a close race in this respect. In the circumstances one would expect to find

that the main feature on the flat and treeless horizon would be the quaint hump and neck of the camel, and that camel pens would hold an equal space with stock yards. Nor were we disappointed.

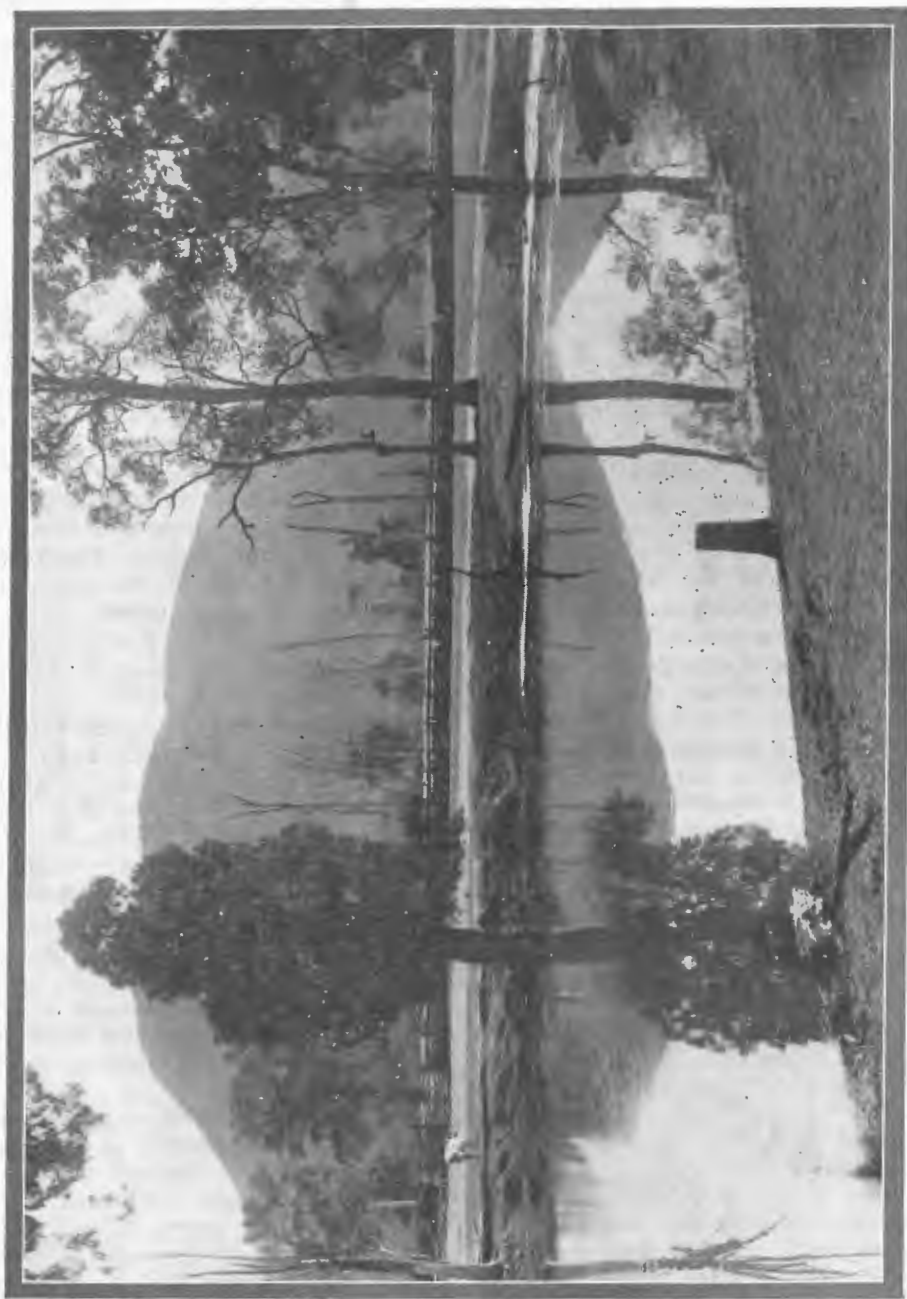
The camel, as has already been said, is the ship of this as well as other deserts; and he awaits extinction by the aeroplane. His only competitor in the team line is the donkey, an animal which appears to share qualities of hardy endurance with the camel. At Copley we saw a team of 26 donkeys, with three relieving donkeys running alongside. This team was in charge of three aborigine drivers. The range of these teams, as also of the camel teams, runs into hundreds of miles.

The statement of this fact is a reminder that at Oodnadatta we were in a country of "magnificent distances."

Mr. McGuire told me of an experience of his on a previous visit, when a lady from one of the out-stations to whom he had been introduced, presented another lady to him as "my neighbour." The Commissioner of South Australian railways, knowing that "neighbourhood" was a relative term in these parts, and that a liberal "next door" meant something quite different from the meaning attached to it in a suburb or a city, inquired further. He was informed that these neighbours were only two hundred and fifty miles apart.

With resourceful back-blockers, however, distance is no impediment to social amenities. Visits from homestead to homestead were frequent and prolonged. Riding, tennis and other sports helped to while away the time; and through the civilizing agency of the easily portable gramophone the dancing rage was capable of assuagement, even at a distance of 1,000 miles north, south, east and west of the coasts of our great Island Continent.

But, as we are told in Mrs. Aeneas



Block—Courtesy "Bank Notes."

Burraborang, N.S.W.

Gunn's "We of the Never, Never," solitudes are disappearing, and a hermit's life is impossible, even in the centre of the Australian desert.

"Backblocks!" said the traveller in scorn. "There ain't no backblocks left. Can't travel a hundred miles nowadays without running into somebody. You don't know what backblocks is—beggin' your pardon, ma'am."

Here in the pen was a team of about 30 camels in charge of an Afghan boss, with whom were two tall and hefty-looking young Australians, apparently in the best of health after their long trek over the desert.

Though the railroads cease abruptly at this point, we can see the overland telegraph wires running along on their posts northward, keeping the North and South connected. We know that there is an adventurous staff engaged in keeping this connection uninterrupted all the way to Port Darwin through the Northern Territory.

It has already been mentioned that the Commonwealth Railway Commissioner, Mr. Bell, has a concurrent jurisdiction over the narrow gauge section of the railway running north, which previous South Australian governments intended to continue right on to Port Darwin. But newer prospects are in contemplation, forced into consideration by the logic of recent history. In spite of the early cartographer's estimate of the desert interior of Australia, the world realizes to-day that it only needs the application of human ingenuity to make these great campestrian wastes blossom with wheat, or cotton, or fibrous plants, commercially valuable. Then there are mining possibilities also in these great, empty steppes.

The new railway project is said to be partly commercial and partly strategic. It consists of a horse-shoe shaped broad gauge railway, starting from Kalgoorlie and running in an inner ring round the Continent, near enough to the coast to tap the railway systems of the States, which run south at Darwin, west in Queensland and N.S.W., and connecting with the express railways from Brisbane, Sydney, Melbourne and Adelaide, and so round to Perth. Strategically this prospect appears

sound to the layman. In case of invasion at any point on the Australian continent the connecting line could be torn up and the people retire to the "interior lines" formed by the great circle railway.

Commercially a ring-railway round the Continent, with feeders to the parts right round to the coast, would be as valuable to development as it would be to military tactics. It would open up the country. Cattle which are now overlanded could be trucked. Parts now undeveloped on the immense coast line would be opened up. Lands now locked by nature and distance and called desert lands would come into profitable use. Then if some super inventor could solve the problem of bringing down the rain from the heavy clouds which assemble so magnificently to mock the settler in these regions, the wealth of Australia could be increased to unimaginable proportions, and a great and peaceful pastoral and industrial nation could perhaps solve the universal problems of poverty and discontent.

Leaving Oodnadatta on the homeward journey—with one envious peep northward—we traverse in broad daylight the country over which we passed the night before. Before us is a red gravel desert spreading away for miles, sparkling with opaline colour of horizon and sky. No need to make roads—they are ready made. The hard pebbles lie strewn on the flat plains, broken only here and there by low hills, not more than fifty feet above the level of the plain. The whole place looks like a vast worked-out gold field, which had been passed over by some monster gold dredge, leaving the sand and pebble in its wake. Occasionally the plain humps up into long embankments as if vagrant railway lines were being constructed, leading nowhere.

Stopping on the return journey at Algebuckina Bridge, 1,900 feet long, that emblem of the big-minded pioneer statesman of South Australia, we saw the lonely graves of two prospectors, who had braved the desert in pursuit of fortune, and found the site of their long home. Their sleep is only disturbed by the thunder of the train over the Algebuckina Bridge once a fortnight, for the trains do not run between Marre (formerly Hergott Springs)



"So turn your horses round the spur,
And face 'em up the hill."—*Banjo Patterson.*

On the North Coast of N.S.W.

Block—Courtesy "Bank Notes."

and Oodnadatta oftener than once a fortnight.

At a wayside station, William Creek, we met two young opal miners, who had just come in from Stuart's Range opal fields. They were in a frame of mind of that grim and set character which one finds all over Australia among our people in droughts, or under the periodical crises, whether of weather or other adverse conditions which occur within our great Island Continent—a set determination to wait, and that nature shall not daunt their spirit.

These two opal miners were proceeding to Adelaide to make known to the Government the wants of the men on the field. Scarcity of water is the only drawback to the miner. The working of the opal is simple and inexpensive. It is, therefore, a "poor man's" field, little capital beyond a man's own courage, initiative and muscle being requisite. There is no deep sinking or expensive plant required. Mr. Keith Ward gives the opal miner's outfit as a pick, shovel, pocket knife and pliers. As the opal miners were not able to board our crowded special, they had to wait for some days before continuing their journey, begun at Stuart's Range with a camel team. They deserve success, for they must be a lion-hearted race. Yet, to hear them, you would bet that they would not exchange their life of adventure and of interest with the workman in the city, though the latter may have the power to enjoy the "bright light," the cinema, the jazz band and the surf beaches.

We heard of an adventure by the engine-driver of our train. Saving up his holidays till they amounted to four months' leave, he, with some mates, hied away to Stuart's Range opal fields to try his luck. The party was lucky, and secured a quantity of opal which they afterwards sold in Adelaide for £2,500. Most men under the circumstances would have taken their holiday in some centre of what we regard as civilization—Melbourne or Sydney or Adelaide. It was indeed a courageous adventure to have trekked away out over the gibber plains under those wild and primitive conditions to search for precious stones. And, when one reflects further, it might be regarded as

more striking that, after such a successful adventure, our lucky digger could ever have been content to return to the humdrum of an engine cab, and the routine of the railway service. If Australians generally were made in this mould there would be no need to pass legislation to abolish the bookmaker.

The existence of flowering shrubs and plants all over Australia, and in the most arid zones, is one of the wonders of our arid territories. Of these the Stuart (desert) pea is the most striking, and is of almost universal growth. "The whole of the vegetation," says Captain White, "has to fight an almost continuous battle against a droughty climate. After thousands of years of battling against drought, the plants have learned to spring rapidly with the rains and come to maturity in as quick a time as possible, so that their seed is beyond damage by the time the frosty nights set in. To be able to accomplish this the seeds have a great property of quick germination, so as to take advantage of the few opportunities when rain falls, and climate conditions are favourable. The droughts are of such long duration that the seeds must have power to resist exposure to heat and cold. When the seed has germinated the plant must be endowed with great tenacity of life ever to pull through, for the moisture is soon gone after the heaviest falls of rain in that loose, sandy soil, which seems to have no retaining power."

Another day of monotony of form, but variety of colour, of low hills, sparse vegetation, salt bush, pebble-strewn plains, of mirages, of oases formed by the bore waters, and of flower-bordered storage dams. Then a night in the train, and we find in the morning that the Flinders Ranges have gone over again to the east of us. Our special carriage this time was coupled to the Transcontinental Express on its eastern trip, and thus the Commissioner of the South Australian Railways and his guests are literally "dragged at the chariot wheels" of the Railway Commissioner for the Commonwealth Railways into the busy central station at Adelaide, in time to link up with the special express to Melbourne.



By D. G. SOUTAR

COUNTRY COURSES

GOLF courses are dotted throughout the length and breadth of New South Wales. From Tweed Heads to Gabo, from Sydney to Bourke, and even in the back country beyond the game is played. In addition, many station owners have their private links laid out. As an indication of the popularity of the game, quite a number of clubs own their links, and a considerable sum has been spent in effecting improvements. Climatic conditions, without enormous expense, have



A. Leone, Manly Golf Club.

made it almost impossible for country courses to compare favourably with sea-side courses. The nature of the soil, different grasses, and natural features generally give the latter a big advantage. Nevertheless, there are some very fine country courses, over which it is a pleasure to play. The city player who is a stranger to country conditions may not agree with that statement, but after a round or two can be brought to appreciate their value. The chief difficulty is the difference in the short approaches and the putting greens. The greens are invariably what is known as "chip" greens; that is, all the grass has been chipped off, and the surface smoothed over. Loose sand is usually spread over the surface to enable the ball to grip. At first the sensation of putting on "chip" greens is a peculiar one, and many amusing episodes could be quoted. My first experience of "chip" greens was many years ago, in the early days of Leura, before the greens there reached their present state of excellence. At the old second hole my drive was within ten yards of the green, and I had visions of a three. I eventually holed out in nine, after taking seven putts. The green was far from being a good sample of a "chip" green, and in addition was on a slope, but the experience was a ludicrous one. Many a good round have I engaged in over country links since then; many a good putt have I holed; and—it must be admitted—an occasional short one missed.

Orange Course.

It is rather a difficult matter to single out any particular course for special mention, but the one that appeals strongest to me is the Orange course. The ground is owned by a syndicate of en-



M. P. Aronson, Manly Golf Club.

made a lot better by judicious expenditure in making improvements. The cost when borne by a number would never be felt, but when the burden has to be carried by a few it becomes a heavy one. I have digressed slightly from the purpose of this article, but my faith in what the future of the course could be is my excuse. There are a number of fine sporting holes, with accurate tee shots, as the prominent feature. This is rather unusual in country courses, where the lack of natural features and the wide expanses give plenty of scope to the erratic player. The first tee is practically the lowest point on the course, and the lay-out until the highest point has been reached is a triumph of golfing architecture. To climb directly to the top would be fatiguing, but the course has been so laid out that although the players are climbing all the time the grade is not more noticeable than at the second hole at Leura or the third at Wentworth Falls. At the conclusion of his first round the visitor would probably have a little difficulty in placing the different holes, due to the maze-like way in which the fairways run,

thusiastic golfers, with Dr. "Jack" Howse at their head. Good work has been done to get the course up to its present excellent state, and an endeavour is being made to get the fairways grassed with couch and other grasses. Situated about two miles from the post-office, the site is a fine one, and the course is of eighteen holes. From the highest point a magnificent view of the surrounding country is obtained, and nothing could look finer than the orchards in full blossom on the slopes of the Canoblas. In the winter time the variegated coloured soils provide quite a different picture to the spring, and when the whole is surmounted by the snow-capped Old Man Canoblas the scene is a grand one. From its geographical position, combined with its excellent climate, the golf course at Orange should be to the western golfers what the mountain courses are to the city players. The townspeople of Orange are not fully alive to the value of a good golf course to a holiday or health resort, and, good as the present course is, it could be



J. B. McGill, Killara Golf Club.

but another round or two would make their location easier.

Dubbo Links.

At Dubbo the course was originally laid out on the town common, which, being flat and featureless, made the course an uninteresting one. With commendable enterprise, new ground was purchased and a course laid down last year. The undertaking was a big one, but good work has already been done in improving the fairways and greens, and in a year or two it will take its place amongst the well-known country courses.

Other Western Courses.

At Bathurst there has been a strong club for many years. A fine clubhouse has been built, probably the best in the country, but the course proper suffers in comparison with others privately owned. Laid out on public ground, it is easily accessible to players, but cart ruts, hoof marks and such-like "hazards" have to be contended with. A deep creek with a loose, sandy bottom makes a fine hazard at a number of holes, and a bad approach is severely punished. Most of the holes are of good length, and little fault could be found with the layout of the course. At Forbes the town common has also been resorted to, and the course has been well laid out. The lagoon runs along the full length of the left-hand side of the course, and a pulled ball will come to grief. Big trees have been cunningly utilized as hazards, and it is surprising how frequently they obstruct a ball slightly off the line to the hole. Being in an old mining field, many of the smaller dumps and shallow holes have been skilfully brought in as hazards, and altogether the course is a good test of the game. At Parkes the golf course is laid out on fine, widely undulating country. Prettily situated, some fine views are to be obtained from various parts of the course, but unfortunately the luxuriant growth of grass confines play to a few months of the year, but a curtailed round is resorted to by those enthusiasts who play throughout the year. At Cowra there is a most enthusiastic club with a few fine players. The links are laid out on the common, and the ground being sandy there are great possi-

bilities. Couch grass grows well, and a bunkering scheme was drawn up last year which should make the course much more interesting. That is a great drawback to many country courses, the lack of variety. Wherever possible bunkers should be cut and the courses made as interesting as possible.

Southern Courses.

On the southern line there are numerous clubs, and some fine courses, notably at Goulburn, Cootamundra and Albury. These courses, being owned by golfing syndicates, have a big advantage over those courses not privately owned. Money can be spent in improvements, which could not be otherwise carried out. At Goulburn the course is on the immediate outskirts of the city and adjacent to the railway station. There are a number of natural hazards, including a creek, and the most has been made of them to make the course interesting. The ground gets hard and fast in summer, and being somewhat exposed is considerably affected by a strong wind.

The course at Cootamundra is laid out on fine golfing country within five minutes of the heart of the town. The course provides a fine test of the game, especially after rain, when the ground is soft. The greens are small but true, being top-dressed with fine gravel. Lopping the trees has proved a great success, for besides providing excellent hazards they add considerably to the beauty of the surroundings. Formerly a large and enthusiastic club, the membership has dwindled, mainly through players in the Public Service being transferred to other districts. No doubt, its glory will return, but it is a pity to see such a fine course so little used. Geographically, its position is akin to Orange in the west, and it seems to the writer that a big annual tournament would be largely attended and create a healthy enthusiasm in the district. At Albury the course has been laid out in a pretty setting of the Murray Valley. The site is most picturesque, and the green fairways, like avenues amongst the trees, add a fine blend of colour to the scene. Trees are the main hazards, and straight driving is essential. The greens are grass, but they are not true, as it is impossible to keep

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How To Bat.

IN last month's issue I emphasized the importance of many things in regard to batting, having to do with the necessary preliminaries which should be observed before leaving the pavilion to take a place at the batting crease.

Now I am going to write about some things of very great importance which a player should know after he leaves the pavilion, and yet before he eventually receives a ball from the bowler. There are so many things operating against you surviving that fatal first ball that the player who has been warned against them has a better chance of negotiating it. No one likes to get out without scoring, much less to be bowled first ball. Most men are anxious about making their first run. That is why the batsman at the other end is usually (or if not, should be) backing up for a short run in order to "get him off it," as the saying is. Some men are positively nervous. There is a vast difference between anxiety and nervousness. Anxiety is a condition caused chiefly by the state of the game, and a keen desire to do well so that your effort will restore the balance in your own team's favour, and also a very natural desire to escape getting what is familiarly called a "blob."

Why Players are Nervous.

Nervousness is largely temperamental, and does not cease its influence until the batsman has made somewhere between ten and twenty runs. Many things cause it, but the chief one of all is, I think, the occasion, and its influence is felt in a more or less degree, according to whether the match

is international, interstate or club. Some men are nervous under any circumstances, others are only so according to the environment in which they find themselves. Some get used to the environment; others never do. Some players are excellent batsmen, and give promise of greatness in the higher grades, but put them into a State Eleven and they never reproduce their form. It is just a matter of degree. We have seen a player who has been successful in State cricket moved up to the highest grade, *viz.*, international, and fail time and again, until he is most reluctantly left out altogether. Some men will never succeed in the best company; they are temperamentally unfitted for it. Other men fail continuously, yet judges know that they are the right stuff, and will make good if only sufficient opportunity is given them. We have an illustration of such a player in our N.S.W. Eleven to-day. Whether he will eventually succeed in international cricket only the future can decide; but why not? The man who makes runs when they are wanted is the one you can rely on. It is the way a player makes his runs which proclaims the batsman, *not the number of runs he makes*. Do not imagine because a man shows signs of anxiety in the pavilion that he is, to use a popular phrase, "dropping his bundle." Some men are highly strung, and inaction only serves to accentuate the condition. Frequently I have found myself, when there has been a batting collapse, unable to look at the game. I become restless, my hands shake, and all I want in the whole world is for my turn to come round so that I may go out and try to restore the situation. As soon as the

pavilion is left behind every feeling of distress disappears and I find myself reveling in anticipation of the strenuous fight ahead. That is temperament; it is absolutely nothing to boast about; it is within me, and I cannot possibly do anything else. It is born in me; it is heredity. Therefore, do not think unkindly of those who are not so fortunately endowed by Nature, for they are not responsible for their weakness.

On The Crease.

Now, let us leave the pavilion well padded, gloved, booted, with a good bat, and feeling as fit as a fiddle. Do not walk too fast to the wickets; it allows your eyes to become accustomed to the glare of the sun after the softer lights inside. Watch the ball as the fieldsmen throw one to the other; it is good practice for the eyes prior to facing the bowler. Do not follow the ball with your eyes if it is thrown high; they may focus the sun, and you will not be able to see properly for many minutes. Then, you take guard, and it does not matter which you take, centre, two legs, centre and leg, or one leg, *i.e.*, leg stump, it is just a matter of what one you are accustomed to. If you find you are persistently getting out leg-before and your usual guard is centre or centre and leg, alter it to leg stump; it will probably overcome your trouble. For myself I always take leg stump to either a right or left hand bowler bowling over or around the wicket. I think most good players take centre and leg, though "Victor Trumper" invariably took centre. If there are sight boards at each end and they are not in proper position have them moved so that the bowler's hand when delivering the ball shows right in the middle of it. Do not overlook this important point, for a sight board out of position is far worse than none at all. Again, if it is not high enough and cannot be raised, and spectators are watching the game over the top of it ("how they do love to get right behind the bowler's arm!") ask them to move. My experience has been that they will do so willingly; they are usually unaware of the handicap they are imposing upon the batsman. Speaking of sightboards reminds me of an incident which happened at Kensington Oval during a Test match. Victor Trumper was batting, and it was a bright,

sunny day. Some genius from a window well outside the ground, and just above the sightboard, flashed a mirror directly into his eyes. The game was discontinued and an attendant despatched, who soon relieved the situation.

Gripping the Bat.

Most players hold the bat with both hands as near the top as possible. This gives plenty of freedom for the lower hand to move down the handle in playing back, which it does instinctively. Some hold it with one hand on top and the other at the bottom of the handle. "Clem Hill" was noted for this, the effect of which was evidenced in his stand at the wicket. He had to place his feet wide apart, with the bat between them, to get down properly and work his body into an easy position. It gave him the appearance of crouching, but this position was only assumed because it was the easiest for himself at the moment. He was never seen in the same attitude when actually playing the ball.

The best method is to stand as upright as possible. Provided it is easy and natural, it gives you a better sight of the ball. Have the bat resting comfortably close to the knees, with the blade turned almost square to the bowler. Some great players, "Victor Trumper," for instance, turned the face of the bat towards the legs, and it really does not matter, for either is effective, provided the bat is straight when it comes in contact with the ball. Never turn the bat outwards, *i.e.*, in the direction of mid-off or extra cover. I would recommend anyone to stand as straight as possible, bat behind the feet, right foot pointing to extra cover and left foot towards mid-off, with both hands as near the top of the handle as possible. The head should be turned, but not the body, so that you have a clear view of the ball with both eyes. If the head is square to the bowler the position is irksome and ungainly. Once the bowler commences his run to the bowling crease watch his hand which holds the ball, and never take your eyes off it until he releases it. This tells you which spin is imparted to the ball, whether it is a fast, medium or a slow delivery, and gives you a much better chance of judging its flight. Again, if you are at the bowler's end, and he is an unknown quantity, watch his

hand just as though you were the batsman until the ball is delivered, then watch the effect as it reaches the batsman. This is very helpful when you have to take strike. Many a trick has been detected and rendered useless by adopting this simple expedient.

Wicketkeepers Who Talk.

Be careful of the wicket-keeper who is always talking to you. Some men do it without any ulterior motive, some with the idea of talking you out, but under any circumstances it is not very pleasant to have to listen to constant chattering when you are trying to concentrate on the job in hand. I would advise anyone to ask in a friendly way for it to cease. The honest wicket-keeper won't mind a bit, but the other chap will and may probably show some displeasure. If so, you may be sure you've bowled him out. That puts me in mind of a joke "Hughie Trumble" played on me in my first match in England, in 1899, at the Crystal Palace. "W. G. Grace" was captain of the team, and just before going in to bat "Hughie" said: "You be careful of 'W.G.,' he will try to

talk you out." I didn't know for the life of me what he meant, but he said, "If he tries to talk to you don't answer him; just let him talk." I went in, and sure enough when the over was finished up came "W.G." and said: "Well, young fellow, this is your rst game in England; I hope you do well." I promptly turned away without a reply. This went on for some time, "W.G." always giving words of encouragement, yet I gave no answer. When I had made about seventy he came and said: "You're doing very well." The feelings I had cherished for some time got the better of my instructions, so I said to myself: "If he can talk me out now he is welcome to it," so I replied and thanked him for his good wishes, after which he went on encouraging and helping me, and was the first to offer congratulations when I topped the century. I met the "Old Man," as we all affectionately called him, many times after that, and he was always ready to give a friendly hint and a helping hand to the young players.

Next month Mr. Noble will deal with the important subject of "How to Practice."

THE GAME OF GOLF

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grass greens up to the mark without having a good supply of water laid on. Under the circumstances, it might be better to have first-class "chip" greens, as there is nothing more exasperating than to throw away an advantage secured by good play, through an uneven green. Grass greens are preferable, but only when kept in first-class order. The Wagga Club is probably the strongest club numerically on the southern line, and their annual tournament attracts large entries. The course has been laid out on the racecourse, and has been made as attractive as circumstances will permit. A racecourse, with its fences and buildings, is not the best setting for a golf course, but the area required is not always available, and it then becomes a case of securing the next best. The course is kept in good order, and the enthusiasm of the players is unbounded. There are numerous other courses throughout the southern districts, but space forbids a de-

tailed description of them all. Their character varies from the sun-baked ground of the plains to the picturesque setting of Cooma and Bombala and the snow-capped Kosciusko.

Courses in the North.

On the northern line the distance separating the principal towns has had its effect upon the game. Many fine players have upheld the honour of the north, but with advancing years the game of bowls has proved attractive. The Tamworth Club secured their own ground last year, and the new course will be more in keeping with such a progressive town, embracing, as it does, many keen and enthusiastic players. The Armidale Club also changed its quarters to the racecourse, where the wide expanse will give ample room for a nine-hole course. At Glen Innes there are a number of sporting holes, and the most use has been made of the creek

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THE WOMAN'S CORNER



A HUMAN FAIRY STORY.

“ANYONE here for Warrimoo?”
 “There are some beggars who don't know when they are being refused, and I am one of them,” said Mrs. J. A. Wilson, J.P.
 “But, heart and soul, I am for the



Mrs. J. A. Wilson.

children of the slums, and that gives me the courage to beg for them. In the past it has been for picnics and outings to the sea, and often when I've had my hand in people's pockets they have said: 'Now, this is the very last time.' But the last time

never comes. In the matter of food for these little human chicks, Mr. Rayner, of the Pavilion Café, at the Quay, has stood by me loyally. I make terrible demands, too.

“But a much bigger scheme is now well under weigh. In England there are, I am told, many holiday homes where the children who live in poor and congested areas are taken for a fortnight's holiday. Now, we are going to have our very own holiday home in the heart of the Blue Mountains. In a few months—I won't say just how many, because disappointments might occur—a great airy bungalow will be ready at Warrimoo to receive the poor children of our slums. Sir Arthur Rickard has donated the land, and Mr. Theo Marks is designing the bungalow.

“There are to be four verandahs, so that the children can be segregated appropriately, besides providing for all conditions of climate. To the dormitories there will be large glass doors, which will fold back, leaving them like a room with one wall out. And each dormitory will have around its walls a fairy story or a nursery rhyme painted upon it. I propose to have small set-in tables and old-fashioned benches in the living rooms. When the children arrive they will be given a bath and their own clothes taken from them and kept till they are ready to return to their homes. While with us they will wear print rompers or suits or frocks. Every child will be presented with a toothbrush and a tube of paste—that has been one of my dodges already at the picnics. I find there is no slackness once they get the habit.

“Ten voluntary workers will take a fortnight's duty at a time under a trained matron. We already have the matron, who

is a young war widow, devoted to children. I have never found any difficulty in getting help from women and girls in the cause of the community, and I know they will support me now. My sister, Mrs. Arthur Deehan, is my *aide de camp*.

"Seven beds have been promised up to date. It only costs £35 to endow a bed. If anyone feels inclined to do so I would like to mention that the deputy governor of the Commonwealth Bank, Mr. J. Kell, is treasurer of the scheme. When we get going so many beds will be allotted to the Red Cross, so many to the City Missions, and a couple will be put at the disposal of the hospitals for those convalescent children who have no other means of getting a holiday. The bungalow—if my hopes come to the full fruition of their vision—will accommodate a hundred children at a time, and will be open all the year round. Two thousand six hundred children should thus have a fortnight in the country every year, learning the secrets of our wonderful bush, gaining new life from our happy hills. They are our future citizens. Most of them have to drag themselves up. Not that there is not love in their homes—there is! Plenty of it!—but little time for their mothers and fathers to give practical demonstrations of it, for they are slaves of the Bundy clock—chasing time all the time to make a living for the little ones.

"I may be too hopeful," concluded Mrs. Wilson, with shining eyes, "but I really believe that Warrimoo will soon be good Australian for 'fairyland' for these little ones."

DECORATIVE HINTS.

A string of beads twisted round the knot of a low-dressed coiffeur adds an original and becoming finish to evening dress. The larger the beads the better. This style is particularly suitable to the woman who wears long earrings.

Another delightful head-dress is a narrow fillet of black velvet, worn low on the forehead and fastening a brace of ostrich tips at the back, one of which should curl downwards behind the ear and the other stand erect. A knot of velvet hides the join of stem to stem.

The Fascisti cap will be one of the newest fashions in head gear for the autumn. It is a cross between a fez and

a fisherman's cap, fitting closely to the head with a long tassel falling on to the left shoulder. Smart women, however, are not likely to adopt the rest of the costume, which consists of a grey skirt, a black shirt, open at the neck to reveal a touch of white, and a deeply swathed belt, coming low on the hips. A short truncheon, like a log of firewood, the weapon of the Fascisti woman, is thrust through the latter.

FORECAST OF THE JUMPER.

This year those who intend knitting their own jumpers for the cold weather must take their patterns from the boys of the family. When winter comes the sweater effect will prevail, close-fitting to the throat,



with a turn-over "choker" collar and hug-me-tight sleeves to the wrist, with turned back cuffs, as in the accompanying illustration. The waist line goes back to the old Russian blouse style, with a plain-purl band gripping the hips. Those in the van of fashion shall not escape the high collar this year.

MAKING OVER.

To renovate an evening gown which has been soiled at the back by the hot hands

of a dancing partner a square or slightly oblong piece of georgette, silk lace, or net lined with some filmy transparency the same colour as the dress, and picotted all round may be attached to the shoulders, completely covering but without disturbing the soiled parts. Rosebuds or knots of silver or gold galon should catch them, the line of the neck being kept perfectly straight. The ends of the square will then hang in graceful folds and form a cascade to the back panel. A charming effect will be added to if the lower ends of the square are weighted with rosebuds on the points.

A similar device may be put into effect for renewing the front of the bodice, though cleverer fingers will be needed to adjust the material to the top of the openings for a day frock; however, it remains a simple matter. The square ends of the front piece will be improved by being caught carelessly each side of the waist line with a cabochon of beads, a twist of ribbon, or a flower or two.

HOME DRESSMAKING.

An attractive skirt for a slim figure may be made from two straight pieces of material in the following manner:

Take the width of the material as the depth, and have one end hemstitched or picotted, or finish with a neat roulé. The amount of stuff required will depend on the figure, but two yards should be ample for a person with averaged sized hips. Cut the material into two equal lengths. You now have two yards, possibly thirty-six inches in depth. On a table or a flat surface place the two pieces together, hem to hem, but with each side overlapping the other by about eight inches. In a reversible material these may be left with only a picot or a French hem as a finish; otherwise they must be lined, and it is effective to line them with a contrasting colour.

Now tack a straight seam from hem to waist, leaving the eight inches on each side like the flap of an envelope, and when fitted machine on the right side. The side pieces will then fall softly over the hips, making a drapery and forming the fashionable uneven hem.

THE CRYING NEED.

Every large city in Australia is sadly in need of a club for working women. No

emancipated country is so badly provided for in the matter of its working women than our own. St. Bernards, at the top of William Street, in Sydney, provided something of the sort in a small way; space was too limited to permit of it accommodating more than a handful. Now even St. Bernards has had to make way for the rejuvenation of the city, and is being pulled down.

London is honeycombed with these clubs, and they are never run at a loss. The Three Arts Club provides nearly two hundred women and girls, students or professionals, in the three best known branches of art—drama, music and painting—with houseroom in the parish of Marylebone; Holborn House, in the Vauxhall Bridge Road, Bedford House in Baker Street, and Norwich House in a backwater off the Edgware Road house many more hundreds—and this to mention only a few such places. Though these originally sprang out of private endowment schemes, all are now profitable concerns.

New York has its Three Arts Club also, providing for three hundred members, while the Rehearsal Club, its younger sister, is a haven for many workers besides stage people. The chief benefit of all these clubs, as above the ordinary woman's club as we know it, is that residency is permanent.

The most ideal of all is the Girls' Community Club in New York, in which every member is a shareholder and has a voice in the management. It has accommodation for three hundred, and has no stupid rules that deprive the residents of individual liberty. It was inaugurated three years ago, and is a veritable republic of girls.

Here meals are run upon the cafeteria system, and every girl has her own room, however small. It is a paying proposition, yielding from four to ten per cent., according to the H.C.L. The girls are divided into committees, each committee making itself responsible for a different community work. A library committee, a garden committee, which cuts the grass and weeds the flower plots, etc., a house, entertainment and commersariat committee, and a club council over all. Dances are given at the club, and there are many parlours where the girls may receive their men

friends. These rooms have ample cosy corners and alcoves, where privacy is assured. Friendships may thus be formed at ease, and love affairs conducted with dignity.

The weekly board and lodging fee ranges from nine dollars to twelve dollars and fifty cents—roughly estimated in our money at two guineas to two pounds fifteen.

A WOMAN PLAYWRIGHT IN OUR MIDST.

Doris Egerton Jones, who is responsible for the writing of the new play, "The Flaw" (produced at the Criterion Theatre recently), is no novice at the game, though she has been hiding her light under a bushel in Australia. Her farce, "Uncle Buncler," was accepted for production in London before the war, and she has five books written about different parts of Australia to her credit. These include "Green Eyes," "The Coconut Planter," and "Time o' Day." Emelie Polini, who has the star part, supplied Miss Egerton Jones with the plot for "The Flaw."

RULES FOR LIVING A LONG LIFE.

Do you want to live till 90? Then read, mark, note and inwardly digest the following rules, given by Dr. R. Norman Foster, a Chicago practitioner, who has practised medicine for the last fifty years:

1. Do not eat too much.
2. Do not drink too much.
3. Do not work too hard or too long.
4. Do not work too little; better work for nothing than be idle.
5. Do work for the common good; all other is destructive.
6. Take just what sleep experience proves right.
7. Use recreation, not for its own sake, but for renewed vigor.
8. Do not always be in a hurry.
9. Dress first for comfort, then for style.
10. Avoid worry; it enfeebles the mind and the body.

And thus lay the foundation for life of the spirit here and hereafter.

NERVOUS WOMEN.

When the nerves get out of order the whole system lags in sympathy, the diges-

WHAT EVERY WOMAN OUGHT TO KNOW.

The premiere was over. It had been a successful evening, the play had been not too bad, and the production and lighting excellent. However, the greatest success of all had been that of a young and hitherto unknown actress who had given a brilliant interpretation of her first big role.

Among the many critics who were discussing her over the supper tables were two girls of her own age. Said one: "I'm glad she's made such a big hit. I always knew she had it in her."

To which the other replied: "Oh, yes . . . I knew she had it in her to act. But I never realised she was such a beauty!"

"She did look lovely," agreed her friend. "I suppose she always had good features, but with that dull sallow skin she looks insignificant, even plain off the stage. But—made-up—she is ravishing!"

"She'll have to paint off the stage as well," laughed the other. "A famous actress must keep up her reputation for beauty in private life as well."

"I can't think why she hasn't discovered mercolized wax. Nearly every pretty actress I know uses it. Marie Hemingway . . . Gertie Millar. . . oh . . . and heaps of others. Someone ought to tell her of it."

"Isn't it marvellous stuff?" exclaimed the first girl. "I couldn't live without it. Directly my skin shows the least sign of getting sallow or blotchy, I use mercolized wax for a night or two and gently get rid of that soiled outer skin. Really, I must tell X— about it, and tell her to get a tin at her chemists. The wax would absorb that ugly outer skin of hers and give the nice clear complexion underneath a chance to show itself. She wouldn't need any paint off the stage then; it would be 'painting the lily.' Why, every woman has a lovely skin underneath if she only gives mercolized wax the chance of revealing it."*

tive system, the liver, the heart, all refuse to do their work.

Nervous women should eat several times a day, have a light luncheon between meals and never omit a warm drink on going to bed.

Gentle exercise and an interest in life are as essential to a woman with nerves as food and air.

An active interest in work that she is partial to will be her salvation.

A celebrated physician has said:

"If you wish to avoid nerves live with reason, have a purpose in life, and work for it. Play joyously, strive not for the unattainable, be not annoyed by trifles, aim to attain neither great knowledge nor great riches, be not self-centred, but love the good and thy neighbour as thyself."

BEAUTY HINTS.

Drink at least one pint of water a day. It is a duty you owe yourself, and is as important as your morning bath.

A glassful as soon as you wake is a good thing, also another at bedtime.

If clear water is unpleasant to you try squeezing a little lemon-juice into it. If you have indigestion after meals, eat without drinking, and drink between meals.

CARE OF THE SCALP.

To cleanse the scalp stir the contents of one egg thoroughly in a basin. Add one cupful of warm water, mix thoroughly, and apply like soap. Rinse in warm water, and dry with a towel. If possible expose the hair to the sunlight and fresh air. This treatment if applied once a fortnight will cleanse the scalp and keep it in a perfect condition. It will also prevent hair from falling out.

SILVER-BACKED BRUSHES.

In cleaning and polishing silver-backed brushes avoid the use of a paste, as it may contain particles of grit. Use a piece of flannel, moistened with ammonia, and rub the article till the stains and blemishes disappear. Afterwards polish with a piece of good chamois leather.

NUTS.

Eat as many nuts as you like, for they contain rich oils that are health-giving. A judicious use of nuts has been known to cure cases of indigestion, by removing the

constipation which caused it. Brazil and pine kernels particularly are rich in natural oil, and give warmth; they also keep the digestive system clear, and do much towards keeping the skin clear and healthy.

Weight for weight, nuts contain far more protein than bread. They are a safe food for all who have a tendency towards rheumatism, and are also very beneficial in cases of mental strain and general nerves.

GOOD THINGS FOR BREAKFAST.

"*An apple a day keeps the doctor away.*"

BAKED APPLES WITH PRUNE JUICE—

Core, pare and cut into halves the desired number of apples. Place them in a baking dish with a half-teaspoonful of butter on each. Sprinkle with brown sugar, and pour prune juice drained from stewed prunes on top of them. Cover the apples, bake till tender, basting occasionally. Serve hot or cold with cream.

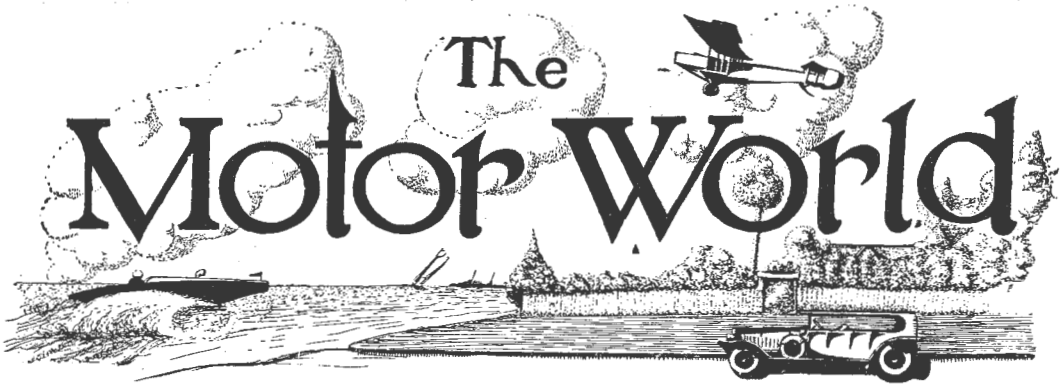
HAM AND EGG MOULDS—

Some cooked ham, breadcrumbs, pepper, salt, nutmeg and a little milk and four or five eggs. Chop the ham finely, and mix with breadcrumbs, season to taste and moisten with the milk. Grease four or five tea-cups, and sprinkle in each some brown breadcrumbs. Coat them inside with ham, and break into each a small, fresh egg. Sprinkle breadcrumbs on top, and bake in a moderate oven. Serve hot, and garnish with parsley.

GOLF.

(Continued from Page 837.)

which runs through the links and provides an excellent hazard. Crossing over to the Northern Rivers, we find courses at Lismore, Ballina, Casino and Grafton. At Lismore the course is laid out in the public park, and although on the short side has a number of attractive holes. At Grafton the course has the making of the best in the State. Laid out on the prettily situated racecourse, the ground is of a sandy nature and easily undulating. The opportunities for a first-class course are great. Beautifully grassed greens could be laid down anywhere, and similar ground in the vicinity of Sydney would be eagerly sought after.



Conducted by "MAX MILEAGE"

ON THE EDITOR'S MIND

Can We Help?

HALF the fun of writing notes like these, which aim to help those interested in motoring who yet can spare but limited time to read, abreast of developments, lies in the effort to try to divine what it is you wish most to hear more about. Nobody knows that so well as you do. You've doubtless got some question that occurs to your mind from time to time. Pass it on—through *Sea, Land & Air*. There may be available a wealth of experience on that very point which you can tap. For our part, what we have acquired through the years by "book l'arnin'" and by the better tuition of hard experience is at your disposal. We ought to be able to make this corner of *Sea, Land & Air* a hot spot of motoring lore if we all, as occasion demands, "rise in meeting" to say our say. Don't blunder and wonder. State the trouble. Let's rub our wits together on the problem, whatever it may be. That's an invitation—for your acceptance.

Braking on Four Wheels.

One of the modern developments of motoring which is fighting for its foothold is four-wheel braking. A number of high-grade cars—principally English and Continental—are already fitted with brakes on front wheels as well as rear, but certain prominent makers have recently considered the idea and stuck to their old methods

of braking on the propeller shaft and on the rear wheel drums. One of the early troubles of motoring was bent front axles, and, while this has been greatly minimised by the modern treatment of metals, it is maintained by these designers that the extra stresses of front wheel braking will only serve to reintroduce front axle troubles. There is no doubt of the efficiency of the front wheel brake—an efficiency which even constitutes a danger in the case of the novice driver. The first experience of applying the front wheel brake when travelling at any speed is usually marked by a tendency to leave the driver's seat and proceed, head first, into the wind-screen, so sudden is the stoppage compared with the ordinary practice. The front wheel brake may come, but present indications do not seem to suggest a universal adoption.

What a Double Decade!

In the known history of the world has there ever been a twenty-year period so full of development and change as that through which we have been privileged just to pass? If we could get the perspective of 2023 A.D. we should realise how markedly these last years have been the age of locomotion—on sea, land and in the air. And now, to crown the lot, comes the adaptation of radio to motors. A novelty in Australia, it has already become an accepted factor in the conduct of much public business on the other side of the Pacific. The Victorian Police Department is showing the way in Australia. One of the motor patrol cars has been fitted

with wireless. It will be interesting to watch the results which attend the departure.

Duralumin.

How many motorists in Australia to-day can tell you anything of Duralumin? Yet maybe in a few years the word and the product will be as well known as steel is to-day. Maybe! There is always a danger in prophesying, but tests have proceeded sufficiently far to warrant the devotion of a few lines to post motorists upon what promises to be the greatest development of the decade.

made of keeping *Sea, Land & Air* readers informed. Meantime, speculate upon the possibilities of cutting petrol bills and tyre costs by halving the weight of the average chassis.

Paddy's River and the Obstructionists.

The progress of history has been across bridges. If the ambitions of the world-leaders of the centuries ago had ended at the banks of the rivers they met in their marches, what sort of civilization should we have been able to boast to-day? We are disposed at times to subscribe to the

CAR WASHING UP-TO-DATE



This huge concrete wash basin is the bathroom for many cars in one of the principal American cities. Payment of the equivalent of one shilling permits a drive round and round the basin to enable the undergear of the car to be well washed. An attendant first places a rubber sheet across the radiator to protect the "maggie" from the splashing.

Duralumin is the name given to a newly discovered alloy which under laboratory tests has been shown to possess the lightness of aluminium and the strength of steel. Such news as has reached Australia concerning it shows that it has been effectively used for pistons, connecting rods and even gears. The successful application of this alloy must mean the revolutionizing of the motor industry. The tendency will become towards much smaller engines and the reduction of motoring costs. We place very great importance upon the future progress of Duralumin, and a point will be

doctrines of reincarnation, and if we might be consulted upon its operation we would suggest first that Julius Caesar reincarnated should be invested with the office of Good Roads Organizer in Australia, and that his first public appearance should be before the members of the Wingecarribee Shire Council. If Caesar could chat over some of his experiences of 2,000 years ago in the matter of bridges certain of the aldermen might begin to view the plan to build a bridge over Paddy's River in a more broad-minded manner. This council has been playing fast and loose with its

responsibilities in this matter. At the point when the Government has declared its intention of constructing a bridge over this crossing the council cheerfully tosses a spanner into the wheels by rescinding its previous resolution to provide the maintenance necessary. If the scheme is allowed to fall through in face of the opposition of the four objecting aldermen it is hoped that every publicity will be given to the action of the obstructionists, and the public be given the chance of knowing what manner of men are these whose vision is limited to the side of Paddy's River upon which they live.

When the Farmers go Motoring.

If you asked us to say what would be the most important factor in ensuring good roads for this country we should say: "Make the farmers motorists." It is a curious situation that the men on the land are usually among the early objectors to a good roads policy for reasons expressed in a fear of higher taxation. They base their first objections on the belief that the

good road is to be provided principally at their expense, and mainly for the benefit of some "blighter" (most likely the motorist), who pays not—merely does he spin. Later, the farmer becomes the keen advocate of good roads. Very often he gathers his new outlook from the driving seat of a car.

The case of the United States may be cited as evidence. Recent figures show that 30 per cent. of the farms in U.S.A. now have motor vehicles. The total number of cars on the farms exceeds two millions. In Canada the farmers of Ontario own 36.8 per cent. of all the automobiles in that province. Near Winnipeg there is a huge grain farm of 12,000 acres, upon which not a single horse is employed. It was estimated that 400 horses would be needed and nearly one-sixth of the property required to feed them. Only motor power is used.

No matter what enthusiasm is displayed in favour of the motor, honesty compels one to say that the day of the motor tractor for farms does not appear to have dawned

DODGE BROTHERS MOTOR CAR

SOUND METHODS MAKE A SOUND MARKET.

Dodge Brothers' Motor Car does not owe its popularity to individual or occasional performances.

In every detail the car reflects the purpose of the builders—to make it a practical car of universal appeal.

Satisfying the demand which the goodness of the car creates is still our one great problem.

During the six months ending 31st December, 1922, over 700 Dodge Brothers' Cars were delivered to Buyers in New South Wales.

STANDARDISED MOTORS LIMITED

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February, 1923.

yet. The recent Government tests, conducted by the N.S.W. Agricultural Department, extended over a month of practical farm operations, and the results did not show the advantage hoped for in favour of the tractor. In America the tractor has put the horse into a back paddock, but greater capital cost and higher fuel prices in the case of the motor enable the horse to pick up the leeway and leave him with some present advantage. But in the cheap carriage of the produce of the farm to near markets and the improving of the social lot of those who go upon the land the motor and the good road are full of promise for the days ahead. Put the farmer into his own car and welcome a new zealot to the agitation for better roads.

this country for the very good reason that few agents are ready to run the risk of backing small cars which offer neither the power to overcome nor the strength to withstand the strains of the bad roads and severe gradients of this country. It is remarkable to notice the effect that purely domestic legislation can have at times upon the export activities of a nation.

The "Corner Cutter."

We meet him often. We met him last on one recent morning, and a situation which for a second had all the possibilities of providing a serious mishap was averted only by the quick thought of the friend in whose car we chanced to be and the acceleration capabilities of the car it-



Mr. Boyd Edkins in his "Vauxhall" car, waiting for the punt at Sackville Reach, Hawkesbury River, on a recent Sunday.

"Hitting Them Up" in England.

We have received a letter from a former Australian, now resident in England, in which he deplors his fate in having to pay something like £30 per annum as licence fee. His car is an average-powered American model. Despite all our grumbings, we are left with a morbid content to bear those ills we have rather than fly to others that we know not of. The high taxation, however (based upon engine power), explains the tremendous outcrop of small cars in England over the past year or two. The majority of those we read about in the British papers do not come to

self. To those of you who know Oxford Street, fix in your mind the point at which it is joined by Wentworth Avenue. Our car made to cross between two trams, one going towards, the other coming from Darlington. A 'bus and a car, also coming from Darlington, helped to give volume to the traffic approaching on our left as we crossed the tramline from College Street to head the tram coming from the city. The turn of his wheel brought him right across our "bows." "Two cars each travelling at 20 miles an hour meet head on—what is the answer?" It looked as though we were going to provide it, when

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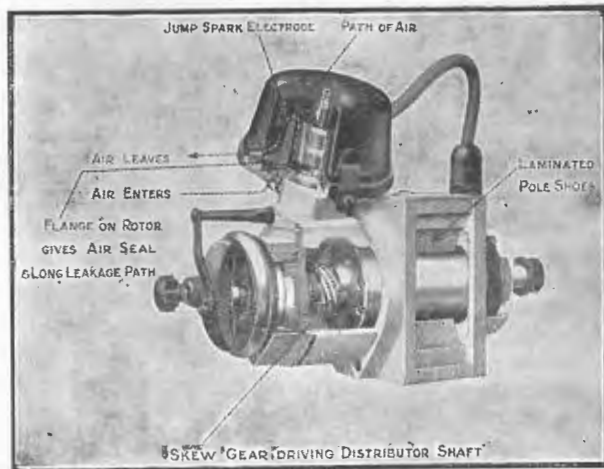
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a quick braking, a full lock of the steering wheel, a demand on the throttle, and we were facing up Oxford Street again, with about two feet to spare on the right side of a collision with the city-bound tram. The silly ass who tries to cut corners at speed is a menace to other road users. Nobody would object if only his own foolish existence were at stake.

MOTOROLOGY.

Six Handy Hints from the Editor's Verbal Tool Kit.

MORE PACE—LESS ECONOMY.

The majority of motorists at the present time desire to run their cars economically, but many may not have realized what an appreciable difference in petrol consumption occurs with an increase of average speed of but three or four miles per hour, to say nothing of greater increases.

Experiments conducted recently have shown that on a given car an increase of 5 m.p.h. in average speed, carried with it an increased petrol consumption of something like 25 per cent. Maintaining an average of 22 m.p.h. resulted in a petrol consumption over a selected route of 30 m.p.g., while increasing the average speed to 27 m.p.h. over the same route and under the same conditions increased the petrol consumption to 24 m.p.g.

In the one case—the lower average—the car was driven well within its "natural speed," whereas in the other case it was frequently forced and driven up a succession of long gradients on a full throttle. The maximum speeds in each case were: 30 m.p.h. for the lower average, and 40 m.p.h. for the higher.

Certainly these tests only confirm impressions gained during many years of motoring, but while they are not put forward as providing any novel data they may assist motorists who desire to economise in petrol but have not appreciated the facts before.

KEROSENE AND PATIENCE.

The use of kerosene as a means of facilitating the removal of a stubborn nut or bolt, especially if it has become more or less rusted in position, is a method as old

as the hills, but the good effect to be secured by soaking the threads with kerosene cannot always be attained immediately, or even in a few minutes. Time is needed to enable the kerosene to percolate into the threaded hole of the nut, and in cases where rusting has been pronounced it may be necessary to apply half a dozen doses of kerosene, giving each one half an hour, if not more, to soak in before its beneficial effect is observed.

A DECARBONISING TIP.

When decarbonising is carried out on an engine having a fixed head no little difficulty is usually experienced in removing from the cylinder interior the loose particles which have been detached by means of a scraper passed through the valve cap orifice. The greater part of this loose carbon can be expelled by using a tyre pump, the end of the flexible tube being pushed into the combustion space. But an even better plan is to use a bicycle tyre pump, of which the leather "Bucket" has been reversed, so that a suction effect is generated when the handle is drawn outward. With a pump thus arranged and its rubber connection pushed into the cylinder the particles of carbon can be easily withdrawn. After each outward stroke of the pump the latter should be pulled away from the cylinder and the inward stroke made with the nozzle in the open air, for this stroke will expel the carbon drawn in during the reverse process.

TO CLEAR A CLOGGED CARBURETTOR.

Even when the precaution has been taken to provide the petrol system with a sediment strainer, either in the fuel line or in combination with the vacuum tank, there exists a chance that dirt that may have been formed by chemical combinations—such as rust—will ultimately stop up the atomizing jet of the carburettor.

Quite often the need for disassembling the carburettor may be avoided by adopting the following expedient: Run the engine at as high a speed as can be obtained with the partly clogged jet. Then suddenly throw on the choke. If the accumulated dirt is not over solid the increased vacuum will draw it through the jet, thus clearing the line.

Flooding of the carburettor also is usually caused by dirt on the needle. Moving the float pin up and down a few times will have the effect of washing the dirt off, so that a tight seat is again obtained.

WHAT TO DO ON SLIPPERY HILLS.

The only way to descend a slippery hill safely is with a good set of chains on the rear wheels, or, if chains are not to be had, heavy rope will do, unless the road surface is extraordinarily greasy.

But there are times when a slippery grade is encountered unexpectedly. Hilly

a locked wheel will slide quite readily on a muddy surface, whereas considerable braking effect is obtained, in spite of the surface, as long as the wheels are rolling. Unless the brakes are well equalized it is better not to use them at all, depending entirely on the effect of the engine to retard the car.

ABOUT SPRING LUBRICATION.

The easiest way to lubricate squeaking springs is to apply oil to the sides or edges of the spring leaves. First, however, it is necessary to wipe or wash the dirt from the edges. After this is done the lubricant

SEE AUSTRALIA FIRST



No matter what scenery the tourist demands, Australia has it. This drift of snow would open the eyes of many folk oversea, and many in this country for that matter, who believe Australia to be a home of heat. This photograph was taken at the end of November last during the 1,000 miles alpine tour on Mount Hotham (16,100 feet). The driver is Mr. T. R. Lough, manager in Victoria of the Dunlop Rubber Company of Australia.

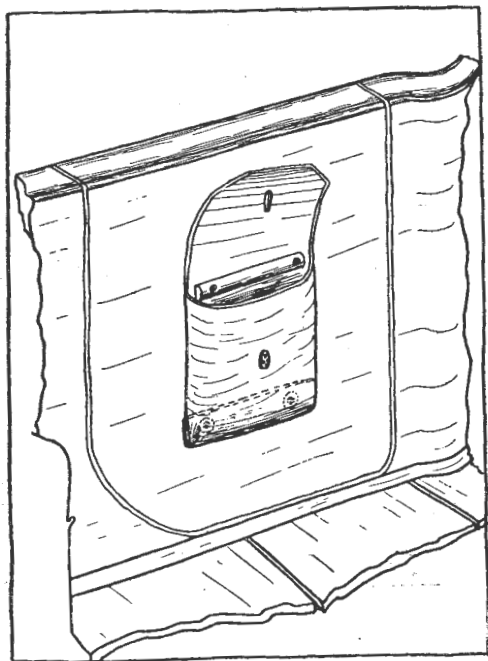
dirt roads are quite apt to be covered with a slippery coating of mud for several hours after rain. If there is time the car should be stopped and chains applied; but sometimes it happens that the car is already on the grade before its treacherous nature is realized. In this case the safest plan is to use the engine as a brake; slip the gear lever into low and then shut off the engine. If the car still runs too fast apply the brakes very gently, but be extremely careful not to lock either rear wheel, since

should be put on the edges, and it will be discovered that it will soon work in between the spring leaves. The lubricant, of course, not only cures and prevents squeaks, but it makes the springs rust-proof and renders them more flexible, thus making the car easier riding. Old oil drawn off from the engine makes an excellent lubricant for this purpose; although some prefer to use a heavier oil, and others apply ordinary cylinder oil, into which some graphite has been mixed.

Another method which is coming into vogue is to encase each spring in a leather case, variously called a shoe, gaiter or puttee. The inside of the case is coated with grease, and thus the spring is kept continuously lubricated. These cases are readily attached, and one filling with grease lasts the entire season.

Spare Bulb Carrier.
A USE FOR THE OLD POUCH.

The motorist who regards his spare bulbs as part of his tool kit, and stores them with his spanners and wrenches,



never fails to find the trouble he is looking for. The storage of bulbs in a manner which will ensure them to be usable when needed is a problem which, like the high price of petrol, seems always to be with us. A happy method was suggested to the writer recently. A friend converted a rubber tobacco pouch, which had seen its best day, into a bulb-carrier. The pouch was fastened in the side pocket, and became actually a pocket within a pocket. The use of a certain amount of cotton wool ensures a safe carrying-place for a couple of bulbs. Any pocket of rubber corre-

sponding to the same general shape will serve the case equally well. There will be no more trouble with broken spare bulbs if this plan is adopted.

A NEW ARRIVAL.

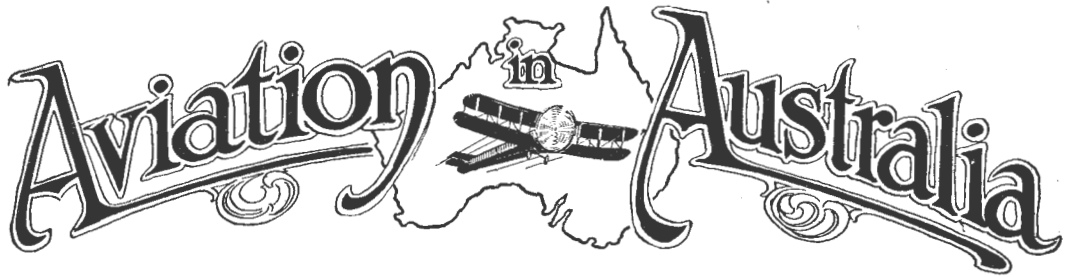
In another part of this issue there is an announcement of quite a new departure in magneto design and construction so drastic that we, in the interests of our many motoring readers, give further particulars of this newcomer, which we have examined and seen in action.

Primarily they were designed to meet the demand for a high-class magneto for light and medium-powered cars, and in all fixing dimensions they comply with the British engineering standards.

Noise in operation has been entirely eliminated by the skew or diagonal gear driving distributor shaft, which also eliminates any tendency to looseness through long wear. The distributor rotor is fitted with vanes, which give a positive and constant air circulation where most needed, *i.e.*, forced ventilation at the jump spark distributor. The nitric acid generated at the spark gap is carried away by the air current, and any moisture or dust deposition rendered impossible. The distributor chamber is so designed that there can be no communication between it and the body of the magneto.

A close study has been made of the possible leakage paths, which have been made especially long to obviate the frequent cause of bad starting in damp, cold weather.

The usual M.L. special patent condenser and hardened ground steel cam cage are retained, and a highly efficient magneto system with laminated pole shoes and Cobalt steel magnets as before. Other notable features are increased accessibility and reduced weight, small things in themselves, but "details also count." These magnetos will give efficient starting at magneto speeds of as low as 60 r.p.m., and can be run as high as 3,000 r.p.m. for long periods, and up to nearly double that speed for intermittent periods. It can be taken for granted that, as a British product, handled by Smith, Sons & Rees, Ltd., it will more than live up to the high reputation established by all this firm's motor accessory lines.



Aviation in Australia

Registration of Engineers.

AN important advance towards ensuring the safety of pilots engaged in civil aviation, and their passengers, has been made by the Department of Civil Aviation, under whose direction comprehensive examinations of "ground engineers" are being held to enable mechanics to qualify as persons competent to grant certificates of efficiency in respect of aeroplanes. The examinations are open to any mechanics or engineers who are connected with civil aviation, and each State in turn will be visited by an officer of the department, who will examine the candidates. Victorian candidates were examined at the Working Men's College and the Footscray Technical School in December, and N.S.W. candidates will be examined at the Sydney Technical College on February 5, 6, 7, 8 and 9.

By these examinations the department ensures to the public and the pilots themselves the maximum guarantee of safety. It has hitherto been possible for a pilot to use his own judgment whether a machine was airworthy or not. He may have known that there were certain defects, but may have been willing to take a risk. Similarly, a mechanic in charge of a machine may, through ignorance or want of skill, have pronounced a machine as fit for service when defects had been left unremedied. It is now possible for a pilot or passenger to demand from a man who has been granted registration as one competent to certify a certificate of the efficiency of the machine which it is proposed to take up.

Brisbane-Adelaide Mail Service.

The Brisbane-Sydney-Adelaide air mail service is expected to be in operation in the course of a few months. The commencement of the service has been delayed for many reasons, but those behind the venture are by no means disheartened, as they

realise that it is better that no stone should be left unturned to ensure the success of the undertaking rather than that the start should be hastened and success possibly jeopardized. Latest reports indicate that the Civil Aviation Department expects advice at an early date of the shipment from England of the machines it is proposed to use.

Charleville-Cloncurry Service.

This service is now firmly established, and is filling a long-felt want in the isolated districts of North-West Queensland. The carrying of lady passengers is by no means an infrequent happening—a fact which illustrates more forcibly than words that the safety and utility of aviation is well recognized by the residents of the north—including the usually timid female section.

Pilot Hudson Fysh states that the service the 'planes are rendering, not only by the carriage of mails and passengers, but also by the distribution of newspapers and the rendering of assistance to settlers in time of flood, has won golden opinions from the people of the north.

Films By Air Carriage.

Captain Tracey, who linked up with the Fox Film Service some months ago to act as distributor, has performed his part of the contract exceedingly well.

Brisbane was visited just prior to Christmas day, but previous to reaching there Captain Tracey had distributed films at practically all the big towns en route. His experiences were, on the whole, pleasant, with the exception of when he was caught in a storm near Walgett. The violence of the storm overturned the 'plane while at a high altitude, but fortunately Captain Tracey was strapped in. The bag containing his clothes was, however, lost overboard, and owing to the raging storm could not be recovered.

OBITUARY

HORACE FIRTH.

It is with deep regret that we record the death of Mr. Horace Firth, which occurred in Melbourne on Sunday, January 14.

The late Mr. Firth was born in England on August 7, 1888, and in November, 1912, joined the staff of the Marconi Wireless Telegraph Company in London as a sea-going wireless officer. In May, 1913, he transferred to the staff of Amalgamated Wireless, Ltd., and served on the following steamers: *Morinda*, *Grantala*, *Moura*, and *Tofua*. At the outbreak of war, in August, 1914, he joined the Australian Expeditionary Force, and embarked for overseas service as a sapper in the 2nd Signal Troop later being promoted to the rank of sergeant. He participated in the landing at Gallipoli, and subsequently took charge of No. 1 Wireless Station on Anzac Beach, where he was very popular. After

the evacuation of the peninsular he was transferred to the 1st Divisional Signal Company in France, where he gained his commission and rose to the rank of 1st lieutenant. While in France he was severely wounded, and in 1917 was invalided back to Australia. After convalescing he was appointed officer-in-charge of the Wireless Section at the Military Signal Training Depot, Moore Park, Sydney. In June, 1918, he was appointed superintendent of the Marconi School of Wireless in Melbourne. About the end of 1919 he resigned and went into partnership with Mr. A. Underwood and opened an estate agency at Thornbury, a suburb of Melbourne, known as Underwood and Firth, and was still in the business at the time of his death. Well known and a popular man, he had a very wide circle of friends, and on our own and their behalf we extend deepest sympathy to his family in their sad bereavement.

DEPARTMENT OF DEFENCE.

AVIATION GROUND ENGINEERS.

EXAMINATION FOR ISSUE OF LICENSES UNDER AIR NAVIGATION REGULATIONS.

An examination for persons resident in New South Wales who require Licences as Aviation Ground Engineers under the Commonwealth Air Navigation Regulations will be held at the SYDNEY TECHNICAL COLLEGE, HARRIS STREET, ULTIMO, SYDNEY, ON 5th, 6th, 7th, 8th and 9th FEBRUARY, 1923.

Intending applicants should communicate with the Secretary, Air Council, Victoria Barracks, Melbourne, not later than MONDAY, 22nd JANUARY, 1923, when full particulars will be forwarded.

T. TRUMBLE,
Secretary.

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In Radio Land

LISTENING IN WITH THE HOME FOLKS

**Broadcasting Service that Lightens the Daily Household Tasks
has aroused Enthusiasm among Women**

By **ROSEMARY CLARKE**

Radio has entered the home. It is known there, and is a welcome visitor. That has been the big accomplishment of radio broadcasting during the short two years since its very modest beginning.

Of course, it is nothing new for radio to enter the home, for ever since the first

in all directions, carrying material that could be understood by anybody who can hear—only then did radio enter the home in the popular conception sense.

What is it doing there?

It is entertaining, amusing, instructing, brightening the lives, adding to the joys



The radio world has heard of M. J. Caveney, the Canadian trapper, to whom the radio telephone means so much. Here is his lonely cabin, close to Sandy Falls, near Timmins, in Northern Ontario. He not only has a receiving set, over which he hears the broadcasting of Canada and the United States, but also operates a transmitter with which he telegraphs to amateurs over a wide territory.

radio wave was created by man it penetrated everything within its range. Ever since radio telegraphy became a part of the commercial communication network of the world and was used for land and sea communication, radio waves have filled the ether in all parts of the globe. But only when the waves of the radio telephones commenced operating through the ether

of millions of Americans. It is civilization's newest and most popular asset, enjoyed by the entire family.

That is a generalization, and as broad as it is it still falls short of the actual truth, as anyone knows who has had occasion to talk to people in diverse walks of life, who are receiving the broadcast radio telephone programmes.

Everyone's experience with radio is different. Everyone gets slightly different advantages from it.

One man wants a receiving set for time signals and weather and market reports.

A woman values her instrument chiefly because it gives her music and entertainment and household hints in the afternoon when her household work is done, and an hour or so of idle time hangs heavily on her hands.

The young man values his receiving set for the jazz music that he receives over it, and for the descriptions of baseball and football games, boxing bouts and similar sporting events.

cudgel their brains for ways of relieving her tedium now sit happily at their own receiving sets, content to know that here is the one great thing of modern life that Sally shares with them without her frail body setting up a single bar.

Mother and father discuss a simple operation that needs to be done for some time. "Let's do it now," says mother, "for I can take the radio set to the hospital with me. Won't that be fine? I can listen in while I am getting well."

The Blankville Radio Club decides that it is high time that it owned transmitting equipment as well as its receiving apparatus. "Why, that is easy enough," says



Emily Exner keeps a typewritten record of all lectures on household matters that are sent by radio. She is an ardent radio fan, and says that her knowledge of housekeeping has increased through her experience with radio.

The kiddies are delighted with the bedtime stories.

Father sits down beside the loud speaker or puts the headphones over his ears with a sigh of relief. He has read the evening paper on the way home, and instead of just killing time until he grows sleepy he listens and is grateful for the entertainment and instruction that comes by radio.

Little Sallie Jones, the neighbourhood object of charity, who never can stir from her wheel chair, wears her headphones as a kind of crown, and the neighbours who used to worry over her unhappy lot and

the president, Sam Brown. "Let us give some radio dances." And the club hires a local hall, sets up its loud speaker, and gives a series of radio dances, to the great joy of the younger set, which dances to the music of the best metropolitan orchestras, received by radio. The radio club soon has its transmitter.

One could go on almost indefinitely with examples like these, drawn from one's own experience in meeting radio fans. There is a different story under every antenna. There is not an aerial wire stretching over

(Continued on Page 880.)

SHORT-WAVE AMPLIFIER

By J. G. REED

Radio Engineer

WITH the advent of the new regulations, permitting experimental work on a wave length of approximately 400 metres, and the time for the trans-Pacific radio tests drawing near, the attention of all experimenters is directed towards the construction of short-wave amplifiers and receivers. Since the lifting of the war-time restrictions on the operation of radio apparatus almost without exception reception has been carried out on the range of wave lengths from 600 to 25,000 metres. The frequencies experienced between these limits are such that they cause very little trouble; but from 450 metres down the high frequency of the received waves produces effects due to the mutual reaction of the component parts, etc., which, to say the least, are very perplexing to the average experimenter.

Capacity plays an important part in determining the signal strength when employing valves either as amplifiers or detectors in radio receivers. The valve is a voltage-operated device, and consumes practically none of the energy of the received signal owing to the very high impedance of the grid-filament circuit. The importance of keeping the capacity at a minimum will be evident from the following example: "A circuit consisting of an inductance, resistance and capacity is connected in series. The inductance has a value of 200 microhenries, the resistance being ten ohms, and the capacity 114 centimetres. A voltage of 0.01 volts at the resonant frequency of one million cycles per second is impressed upon the circuit. The impedance of the inductance at this frequency is approximately 1,250 ohms; the value for the condenser being of a like value, but 180 degrees out of phase. If the ohmic resistance is 10 ohms then the voltage amplification due to resonance will be $1,250/10$, or 125. This means that the received voltage is stepped up by resonance effects from the original 0.01 to 1.25 volts. If the value of capacity is doubled and the inductance halved, the voltage amplification will be reduced by fifty per cent." It will be seen from the above that the use of a single circuit tuner for short waves will result in a fairly low efficiency as regards signal strength owing to the relatively large value of capacity connected across the tuning inductance. A small capacity generally of about 25 cms. value exists in the valve itself and the associated grid condensers, etc. This in conjunction with a finely variable inductance such as a variometer can be used for tuning the receiving set to resonance. Inductive coupling between the primary and secondary ensures that minimum capacity is introduced into the grid circuit.

Details of the construction of a special short-wave receiver employing a single valve were given in the December issue of "Sea, Land & Air." Tuning of the secondary is accomplished by means of a variometer in series with the variocoupler winding, and regeneration is obtained through tuning of the plate circuit with another variometer. For those who missed this article the circuit alluded to is reproduced in Fig. 1. This wire-up is popularly known as the Armstrong regenerative circuit in the United States. The tuning of such a receiver must not be done in the haphazard style usual with circuits of a simpler nature. Every adjustment of the component parts must be made with care, as it is fairly critical and very selective. The order of the various adjustments should be as follows: Set the grid and plate variometers at zero, with the coupling between the primary and secondary at its maximum value. Now increase the value of the plate variometer until the set starts to oscillate, and then tune the primary to resonance, which will be made evident by a click in the 'phones. Then proceed to increase the wave length of the secondary circuit by means of the grid variometer. This will necessitate the retuning of the plate circuit and the primary to maintain oscillation and resonance. By this means of successive retuning cover the entire range of the receiver, and take note of adjustments which yield best results in the form of signals.

When the set is oscillating it acts as a miniature transmitter and emits feeble waves which are capable of being picked up by other receivers within a range of several miles. As a matter of fact, the writer has worked actual telegraph signals over a range of 30 miles by this means. If several sets happen to be receiving on the same wave length interference will result, especially if a single circuit tuner is employed. To reduce this annoying re-radiation to a minimum the coupling between the primary and secondary must be made as small as possible, consistent with a decent signal strength. In addition to reducing this effect, the selectivity of the receiver is increased greatly, and interference from nearby commercial stations or other experimental stations working on approximately the same wave length is reduced to a minimum.

The operation and construction of single-valve receivers has received a considerable amount of attention in this and other periodicals, therefore the subject will not be further discussed here, and the description of amplifiers suitable for work on radio and audio-frequency currents will be preceded with.

For simplicity the audio-frequency amplifier will be found hard to beat. The simplest form

PARIS RADIO CENTRAL

LOCATED at Sainte-Assise, about twenty-five miles from Paris, the most powerful radio station in France, capable of communicating with all parts of the world, was recently opened.

Sainte-Assise Radio is designed to handle trans-ocean and trans-Continental traffic at high speed, and operates on a wave-length about 14,300 metres for trans-ocean work.

The aerial system, composed of three units, is of the double flat top type, and is supported by sixteen towers, each eight hundred feet high. Over forty miles of wire is used in the complete aerial system, and the earth system consists of fifty

The primary power can be secured from two sources—from three 1,800-horse power Diesel engines, or from an electric power station about five miles from the radio station.

A special system of loop aerials erected in groups of seven and equipped with selective and amplifying devices of the most modern design is employed for all reception.

The whole of the traffic, both transmitted and received, by Sainte-Assise Radio is handled and controlled at the central office, located in the commercial centre of Paris, by means of long-distance control. The received signals are con-



Operating room of Paris Radio Central. By means of long-distance control these operators work the actual station at Sainte Assise, twenty-five miles away.

miles of wire and about one square mile of copper plates.

Three high-frequency alternators, each capable of delivering 500 kilowatts to each of the three aerial units, are employed for the power system. It is so arranged that either one, two or three aerial units and alternators may be coupled together at will, giving a power of 500, 1,000 and 1,500 kilowatts in the aerial system respectively. The latter power is only used when communication over a very long distance is desired. Power control is so designed that for trans-Continental work anything from one to 100 kilowatts can be radiated, and for trans-ocean work power can be varied from 200 to 1,500 kilowatts being placed in the aerial circuit.

veyed by land lines or "tone channels" to Paris Radio Central, where a staff of expert operators are employed.

High-speed transmitting and receiving apparatus is installed, which permits traffic being handled at a speed exceeding 100 words per minute. At present the minimum speed exceeds 60 words per minute, and when the three circuits are working simultaneously 36,000 words per hour can be handled comfortably.

With Sainte-Assise Radio in operation France is now in the position of being entirely independent of other methods for purposes of overseas communication, and it is unquestionable that the new station will be the means of extending France's overseas trade.

WIRELESS IN PAPUA

One of the most interesting features of Captain Frank Hurley's expedition to the Fly River, in New Guinea, was the extraordinary success of the wireless apparatus. This expedition has demonstrated beyond doubt that a small, light installation is capable of giving reliable and rapid communication over long distances. It has also clearly shown that it is unnecessary for such a plant to be in the hands of skilled operators.

Captain Hurley's requirements were more strenuous than those that are likely to be encountered in the interior of the Australian continent. He plunged deep into unexplored regions, and his apparatus was subjected to the hardest treatment, the replacement of parts being almost an impossibility. Despite these adverse conditions the standard apparatus supplied by Amalgamated Wireless (Australasia), Ltd., gave entire satisfaction throughout. The service of the company did not stop with the supply of the equipment, but communication was maintained by its various branches. The service mentioned consisted not only of the installation of the apparatus on the explorer's yacht, but also the actual handling of the communications from the interior of New Guinea for delivery throughout Australia.

Description of Outfit.

It was considered that the receipt of messages was of primary importance, and with this in view the company installed a P.I. receiver (Australian manufacture). This receiver is similar to that fitted on over 60 vessels, and is capable of receiving signals up to 12,000 miles. The actual connections, which employ the thermionic valve principle, are covered by the most recent patents.

The transmitter is of a particularly compact type, consisting of a 800-cycle, direct-coupled, quenched gap transmitter of the Marconi principle, all the adjustments being limited to the turning of one handle. The current for the transmitter is supplied from a small lighting set installed on the yacht, and consisted of the usual 32-volt country lighting plant.

The apparatus was fitted on Captain Hurley's yacht by officers of Amalgamated

Wireless, Ltd., at Port Moresby. Immediately on installation tests were made with the company's stations at Thursday Island and Cooktown. The stations reported signals of remarkable clearness and strength, the distances being over 300 miles.

Although optimistic from the beginning, the results exceeded Captain Hurley's expectations. Immediately after the first test he sent the following radio to the Sydney office:

"Wireless great success. Port Moresby staff assisted enthusiastically in maintaining service with Moresby. Greetings from Kaimare, appreciation and regards."

He followed this up with more detail in his letter of October 5, written from Government House, Port Moresby:

"You will be mighty glad to know that we have made a success of the wireless, thanks to your unselfish and kind help. The Port Moresby staff have been enthusiastic in helping us, and to Mr. Leslie and his assistants a great measure of success is also due.

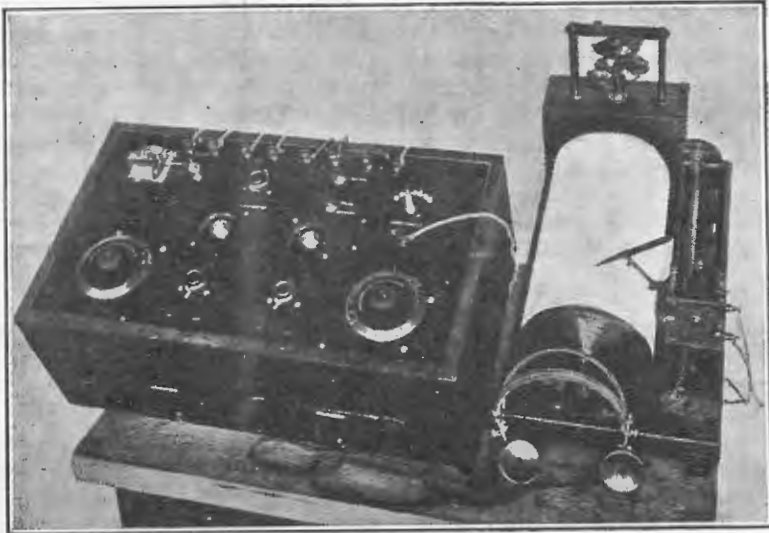
"I have a 30-ton vessel—the 'Eureka'—and owing to the short span between the masts some modifications had to be made. The jib boom was lengthened six feet, main mast ten feet, mizzen ten feet, and a gaff twelve feet, which carried the aerial well aft to balance. The radiation is remarkable; with both shunts in the hotwire ammeter, we go beyond the calibration. We are all thoroughly pleased with the result. We have called up Thursday Island and Cooktown, also Townsville. The two former have gauged our signals '7.'

"When transmitting I run the Delco set in conjunction with the batteries, and the motor scarcely alters the revolutions. McCulloch has had to concentrate on receiving, as I have been altogether too busy on organizing. We receive from Noumea and all Australian stations to Adelaide and Yokohama."

From time to time reports have been received from all the northern wireless stations giving details of the consistent

(Continued on Page 874.)

Radio Set that Writes



With the aid of an ordinary fountain pen this novel radio set makes a written record of code signals that come in during the operators's absence.

A novel device in the shape of a radio receiving set that writes has been built by Dr. F. A. Eckhardt and Dr. J. C. Karcher, both of the Bureau of Standards, in Washington, D.C., U.S.A.

Radio operators who fear that important messages may be in the air while they are away from their receiving instruments need worry no longer. They can employ this device, which will automatically copy signals and take them down in writing.

The instrument copies down the dots and dashes sent from a distant transmitting station without any supervision whatever from a radio operator, and the permanent record made by this machine may be deciphered at leisure by anybody who possesses a copy of the code chart. The dots and dashes are recorded as short and long humps along a continuous spiral

inked line made by an ordinary fountain pen around a slowly revolving cylinder—shown on the right of the illustration.

A feature of the device is the fact that it functions without the use of amplifiers, yet at the same time it is possessed of great sensitivity, copying messages from as far away as Lyons, France—a distance of 3,800 miles.

The actuating mechanism for moving the pen back and forth and sidewise while the cylinder revolves (thus recording the received impulses) consists of an extremely sensitive electromagnet.

The device was built for the specific use of the Coast and Geodetic Survey of the United States Department of Commerce, and at present is being used for recording time signals on surveying expeditions in remote sections of the country.

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TRANS-PACIFIC TEST

CHANCE FOR RADIO EXPERIMENTERS.

It was announced in the January issue of "Sea, Land and Air" that a prize of a handsome

GOLD PRESENTATION MEDAL

would be made to the competitor who recorded the best log of the messages sent from America in the forthcoming trans-Pacific test.

This competition is open to every experimenter in Australia who is a BONA-FIDE entrant for the Test, and who has lodged with the Editor of "Sea, Land and Air," prior to April 25, a coupon, cut from the Magazine, notifying his desire to compete for the prize. The award will be made on the decision of the Central Committee in Melbourne, who will be asked to select from the list of entries supplied by the Editor the competitor whose log of the messages is the most complete.

This is a chance for radio enthusiasts to win a prize which will always stand as a memento of what was accomplished in the greatest radio "stunt" in which Australian experimenters have ever participated.

OBSERVE THE CONDITIONS.

There are only two conditions to be observed: (1) That all entries must be made on a coupon which appears in this issue (and will also appear in March and April issues); and (2) that all coupons must reach the Editor not later than April 25 next.

Now then, Radio Enthusiasts, Get Busy.

REMEMBER, AUSTRALIA MUST MAKE GOOD.

COUPON

Editor, "Sea, Land and Air,"
97 Clarence Street, Sydney.

Dear Sir,—

I desire to enter for the competition you are holding in connection with the forthcoming trans-Pacific test, and agree to accept your award (based on the decision of the Central Committee in Melbourne) as final.

Name in full

Postal Address

.....

Mr. H. A. Stowe's Experimental Radio Station

Mr. Stowe commenced radio experimenting in 1908, and held a transmitting licence in 1910. In those days he covered a distance up to 20 miles transmitting, which is a good record when it is taken into account that the receiving stations



Mr. Harry Stowe.

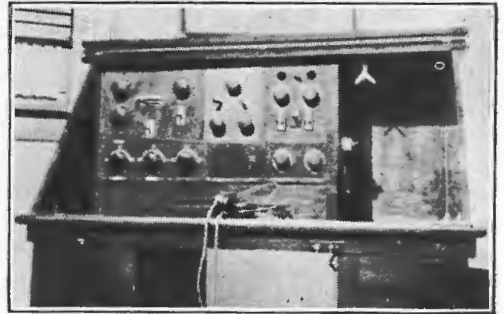
were equipped with crystals. A small motor ignition coil was used for the transmitter. He is one of the few experimenters who in those days was able to get the Suva

Radio on a crystal. Pre-war experimenters will remember the call letters S V A.

His present aerial is 100 feet in height and 180 feet in length. It is of the single-wire sausage type, with wooden rings 6-in. in diameter.

During the war, when experimenters' apparatus was commandeered, he put his spare time to carrying out experiments in high-frequency work.

His present receiving set consists of one stage of radio frequency, one detector and



Mr. Stowe's receiving cabinet.

one audio frequency amplification, with short and long wave coils. He receives signals from all the high-power European and American stations. The set is entirely home-made.

Mr. Stowe is a foundation member of the Wireless Institute of Australia (N.S.W. Division), and has been a member of the Council since 1912. He is also a foundation member of the new Kuring-gai Radio Club.

THE FAMOUS MYERS HIGH-MU VALVE

Filament 4 Volts

Plate 30-40 Volts

This Valve is the finest Andion Valve on the market. Those who have tried it will have nothing else. Its amplifying power is much greater than that of the ordinary valve. Price, 35/-.

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Graduated Dial and Knob, from 6/6 each.



WHEELING ROUND AUSTRALIA

WITH

Heenzo

Red name
for HEAN'S
ESSENCE.

AND

HEAN'S TONIC NERVE NUTS

AS HIS MEDICAL OUTFIT.

Mr. J. Boberg, who, under arrangement with the "Daily Mail," is at present motor-cycling round Australia on an Indian Scout machine, is engaged on a journey that will entail much strenuous and hazardous work, but should yield compensating knowledge of great value. The route to be followed by him is approximately that shown on the above map.

Like the late Sir Ernest Shackleton, of Polar exploration fame, Mr. Francis Birtles, the intrepid Australian explorer, and others who have blazed their tracks through strange regions, Mr. Boberg is taking Heenzo and Hean's Tonic Nerve Nuts with him to safeguard his health. On the eve of his departure from Sydney, he wrote:—

The Manager,

Hean's Essence Proprietary.

Sydney, November 24, 1922.

Dear Sir,—I have long been a user of Hean's Tonic Nerve Nuts and Heenzo, and have found both of great value. As I am starting on my motor-cycle trip round Australia, I will require a supply of your remedies, which will be the main items of my medical outfit. I know from experience that I can rely on the Nerve Nuts to keep me fit under trying conditions, and that timely recourse to Heenzo will keep me free from cold.

Yours sincerely, J. BOBERG.

Obtainable throughout the Commonwealth from most Chemists and Stores.

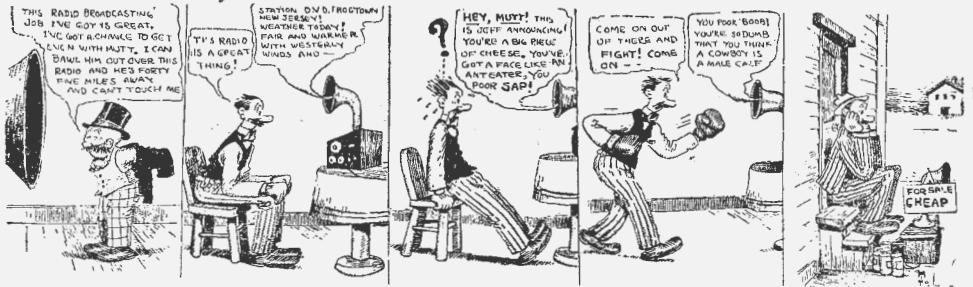
RADIO CONCERT AND ELECTRICAL DEMONSTRATION

The programme submitted by the W.A. Division of the Wireless Institute of Australia recently, at Perth Boys' School, proved a genuine "eye-opener" to the curious crowd that thronged the hall. Most people had obviously come prepared for something quite novel in the way of an evening's entertainment—and they got it. This fact was made sufficiently patent by the constantly recurring ejaculations of surprise, and indeed astonishment, that accompanied each demonstration of the marvels of present day science, from the hearing of the opening phonograph record wirelessed from Mr. W. Coxon's house in North Perth, to the final dazzling display of electrical pyrotechnics performed under

sent moved about the hall and examined the fine display of wireless apparatus, involving some 300 separate specimens and practically all the product of local skill and ingenuity. Mr. A. E. Stevens' handsome receiving set, constructed wholly by its owner in his own workshop, attracted particular attention. This installation was employed for the reception of phonograph records transmitted from the house of Mr. Coxon, in Bulwer Street. The music received was full and clear, and excited general admiration.

At 8.50 Mr. Nossiter, assistant astronomer at the Perth Observatory, gave a description, with illustrative diagrams, of the methods by which time signals are sent

MUTT AND JEFF



—N. Y. World

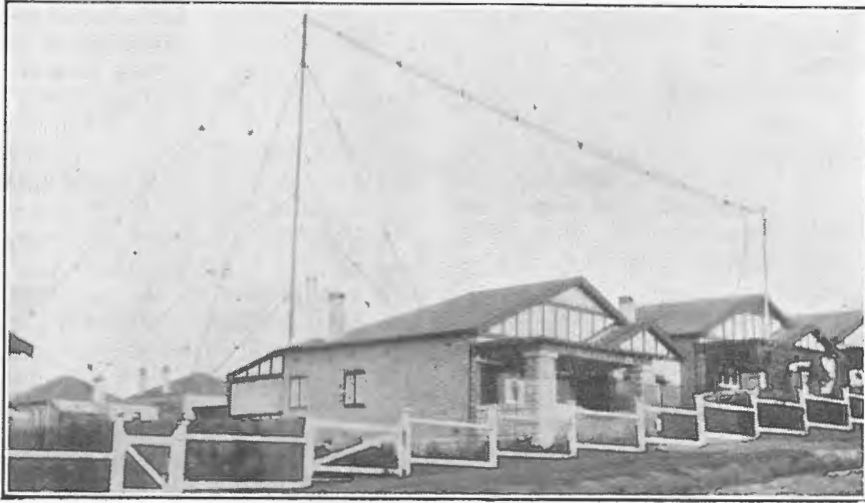
the magic wand of Mr. B. M. Holt, the principal wonder-worker.

The proceedings were opened with an appreciative speech by the headmaster of the James Street School, Mr. Chandler. The speaker emphasized the fact that the exhibition they were about to witness was entirely the outcome of amateur enthusiasm—the work of a number of young fellows keenly interested in the advancement of practical science, with no thought of material gain save perhaps the satisfaction born of achievement.

Mr. Chandler praised the help given by members of the Wireless Institute in developing a valuable hobby among the boys of his school.

Prior to the commencement of the musical portion of the programme those pre-

out from the Observatory, per medium of Perth Radio Station. The usual times for the despatch of these signals are 11 a.m. and 11 p.m. This being a special occasion, however, it had been arranged to transmit the messages at 9 p.m. All eyes were fixed upon Mr. Nossiter as he awaited the receipt of the Morse message which would enable him to record the exact time on the chart beside him. The time signals arrived, and the recording method was shown clearly, Mr. Nossiter tracing the dots and dashes in accordance with his explanation. The next sensation was the arrival per wireless of the official weather report and forecast. As the receiving plant ticked out the code this was transcribed by Mr. Sibley (treasurer of the Institute) and chalked upon a blackboard. As Mr.



This photo shows Mr. Harry Stowe's aerial at his home in Chatswood, N.S.W.

The Radio Bug Bites Royalty.

The Prince of Wales has joined the ranks of the radio fans, and has had a set installed at Windsor Castle. High society in England may no longer hesitate to ac-

cept the new art as *de rigueur*. It is even rumoured that the Prince has so interested the King and Queen in radio that receiving apparatus may be installed at Buckingham Palace.

RADIO EXPERIMENTERS

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Sibley wrote on the board, without any apparent difficulty, particulars of the state of the weather and sea as reported from the Leeuwin, Breaksea and Fremantle, and posted the forecast "Smooth to moderate," the gathering watched him with a curious fascination, and the conclusion of his effortless interpretation of a seeming babel of "dot-dash" was greeted with loud applause.

Shortly after 9 o'clock there began a display of electrical fireworks, which held the audience well-nigh spellbound for some three-quarters of an hour. This was the "high frequency" demonstration. Mr. Holt, who presided over the display, placed a metal cross on an upright connected with the main apparatus. The lights were extinguished, and the cross whirled at terrific speed, shooting out zig-zag spurts of flame, exactly like forked lightning in miniature. The brilliant effect was accompanied by a fiery, crackling noise, which intensified the general excitement that thrilled the spectators. Mr. Holt's second experiment consisted in placing an insulator of great strength against the electrified rod, causing a beautiful brush effect of sparks to fly all over its surface. The third exhibit was a wooden disc painted cross-wise with fresh aluminium paint. When this was touched, whilst spinning, with an electrified rod, the spirit in the paint ignited and gave the effect of a whirling cross of fire, which spread until the whole disc was aflame, the result being a vivid picture. Mr. Holt next inserted the rod in the base of a vertical piece of dry deal, and placed another rod an inch or two above the upper end of the deal. This resulted in the current being drawn through the wood, its passage being traced by a bright red line following the grain. Cutting the wood with a knife, Mr. Holt then revealed a neat hole drilled right through by the passage of the live current. This process was repeated several times, and the pieces of wood were passed round the audience for inspection. Some beautiful colouring was obtained by using deal boards painted zig-zag fashion. These were applied to the electrified rod, causing fiery tongues to shoot along the painted lines. Even without variations of colour, this

effect would have been picturesque, but the changes in the quantity of resin and sap in the wood resulted in ever-varying hues, the delicacy of which drew forth expressions of wonderment. Further exquisite gradations of colour resulted from experiments with large electric bulbs. In these cases the bulb was placed on the rod projecting from the high frequency instrument and its outside surface was touched here and there with the rod held by the operator. Iridescent tints of the most delicate blue, pink, and mauve suffused the exterior of the balloon-like bulb, and as the vacuum inside was gradually reduced by the inrush of air due to tiny punctures caused by the contact of the operator's rod extraordinarily filmy colours continually replaced one another. These demonstrations earned unstinted appreciation from the onlookers. A clever representation of the recent eclipse was afforded by placing a painted disc on the upright and touching its flying edge with an electrified rod as it revolved. The surface of the disc—a silvery grey—appeared to turn black whilst in motion, and around its outer edge a veritable halo appeared. This aureole of glowing fire represented the solar corona, and the general impression was a never-to-be-forgotten one.

Several other experiments of an equally diverting nature were successfully presented by Mr. Holt, one of the most striking being the lighting of a cigarette by merely placing it against the arm of an assistant, through whose body a current of very high voltage was passed. That such electrical energy should traverse the body of a human being without harming him in the least seemed truly astonishing. After the last high frequency experiment some more phonograph records were heard, and altogether the evening's entertainment was a highly satisfying and instructive one. It is to be hoped that this exhibition, given in modest and hardly adequate surroundings, will prove but "the thin end of the wedge" and that the Wireless Institute may soon see its way to demonstrate in a manner commensurate with their importance.

WIRELESS INSTITUTE OF AUSTRALIA

NEW SOUTH WALES DIVISION

This division of the Institute has been in recess since December 7, 1922, when the last general meeting was held. It is expected that the syllabus for the remainder of the period 1922-1923 will be as follows:

February 1, 1923.—General meeting at Sydney University. Special lecture by Mr. Edgar Booth on "Sound Ranging."

March 1, 1923.—General meeting and lecture.

March 27, 1923.—Annual dinner.

April 12, 1923.—Annual general meeting.

be claimed that the prestige of the Institute is such as will enable it to take its position in the front rank of societies devoted to scientific research. The attainment of this grand objective has been the aim of those members who have devoted themselves to building up the Institute for many years, and their expectations have been fulfilled even beyond their most ardent hopes by the latest decision of the members generally.

The Institute has always stood for the attainment of the highest ideals in the field of radio research, and including, as it does,



N.S.W. Committee Trans-Pacific Tests.

Back Row (left to right): R. H. Howell, N. Rubie, E. Lavington, E. Bowman.
Front Row (left to right): G. Tatham, A. W. McKellar, M. Perry, F. H. Harvey, G. Thompson.

A syllabus committee has been appointed, consisting of Messrs. F. Basil Cooke, H. A. Stowe and R. D. Charlesworth, who will make the necessary arrangements regarding subjects for lectures, etc., to be delivered at general meetings.

A remarkable feature of the Institute's proceedings is the whole-hearted support which has been given by the members to the new movement to improve the Institute's status in the community. It can now

the most prominent experimental and commercial interests, it can confidently look forward to commanding the highest respect from the community it represents, as well as from all international communities. It is impossible to forecast the advantages which must accrue from such an organization.

Since the close of the great war Senatore Marconi has been patron of the Wireless Institute of Australia, and the N.S.W.

Division has been singularly fortunate in that, up to April, 1922, E. T. Fisk, Esq., M.I.R.E., managing director of Amalgamated Wireless (Aust.), Ltd., guided the affairs of the Society in the capacity of President. The success which the Institute achieved during that period is too well known to need reiteration. His successor, Mr. C. P. Bartholomew, has since proved tireless in promoting the Institute's best interests. The fact that he ranks amongst the foremost business men of Sydney is sufficient evidence of the high standard which the Wireless Institute maintains.

It is interesting to remember at this stage that the foundation president of the Wireless Institute was Mr. Frank Leverrier, K.C., of Sydney, who held that office during the first two years of the Institute's existence, *viz.*, 1910 and 1911. It is also important to remember that the Wireless Institute was the first society devoted

to radio research founded in the British Empire, if not in the whole world. Mr. Leverrier was succeeded in turn as President by Messrs C. P. Bartholomew, Spencer Nolan and E. T. Fisk, the last-named holding the office at the outbreak of war in 1914.

Of late radio has taken hold of public fancy, and the controlling authorities have shown commendable foresight by issuing regulations for the control of amateur wireless.

These regulations ensure a measure of freedom to genuine radio experimenters which is exceedingly liberal, and have been received by the community with much satisfaction. For many years the Wireless Institute has aimed at the attainment of this consideration by the authorities controlling radio, and can now congratulate itself that its efforts have not been in vain. The future can now be looked forward to with confidence.

VICTORIAN DIVISION

It was recently decided by the Victorian Division of the Wireless Institute of Australia to authorise the Council of Management to conduct all the business of the branch, while the general meetings were to be reserved for lectures and demonstrations. The first general meeting under the new scheme was held in December, 1922. In the absence of the President (W. H. Conry), Mr. H. K. Love took the chair. The lecture for the evening was given by Mr. T. P. Court, who described the experiments he has recently been conducting in wireless telephony. Mr. Court stated that he was using a circuit very similar to that used by Mr. Chas. Maclurcan, of Sydney. In his station Mr. Court is using a $\frac{1}{4}$ -k.w. Marconi transmitting tube. The plate voltage is supplied by a H.T. generator at a pressure of 1,700 volts, and the filament is lighted by D.C. Mr. Court condemned the use of A.C. for filament lighting, pointing out that as it was impossible to take the grid coil lead from a place that is always at zero potential if A.C. is used it introduces an unpleasant hum into the radiated wave. Mr. Court

declared that single-coil circuits so commonly used in America should never be licensed for use in Australia, as a set fitted with such a coil invariably radiates several harmonics; even the two-coil circuit which he was at present using was not entirely free from this objection, and it was his intention to add a third coil to his set in the near future. The usual system of grid modulation is employed by Mr. Court, who said he found that an ordinary ignition coil gave as good results as a modulation transformer as any properly designed transformer. Mr. Court added that a condenser of about .001 M.F. in the ground lead had the effect of greatly sharpening the tuning of the transmitter and reducing the strength of harmonics radiated.

Later, Mr. Ross Hull (Vice-President) gave some hints for construction of a low-powered I.C.W. transmitter, using a spark coil for supplying the plate current. A receiving valve is used in the transmitter, and is lighted by the same battery as is used for working the spark coil. Mr. Hull explained that with such a set four amps was possible.

New Sea-Going Operators.

Messrs. R. C. Humphery and H. Stiepwich, both of Sydney, successfully qualified for the first class certificate of proficiency in radio-telegraphy, and have been appointed to the sea-going staff of Amalgamated Wireless, Ltd.

Mr. Humphery was appointed to the Commonwealth steamer *Calulu*, trading between Australia and the United Kingdom; and Mr. Stiepwich is on the Union Steamship Royal mail liner *Tahiti*, trading between Australia, New Zealand and San Francisco.

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Waverley Amateur Radio Club.

At a meeting of the above Club, held at the Club Rooms, in Macpherson Street, Waverley, on Tuesday, December 15, 1922, the following officers were elected for the ensuing six months:

President, E. Bowman; Vice-Presidents, G. Williams and G. Tatham; Committee:



Waverley Radio Club.

Left to Right: E. Lavington, Hon. Treasurer; E. Bowman, President; G. Thompson, Hon. Secretary.

Messrs. A. Burrows and M. Perry; Librarian: W. Singleton; Hon. Treasurer: E. Lavington; Hon. Secretary: G. Thompson. c/o. Mrs. Mills, Macpherson St., Waverley.

Have You a Good Memory?

Yes, you have. For instance, whether you know it or not, here are some of the things you can do yourself:—

YOU CAN remember the contents of every book you read, or every speech you hear.

YOU CAN remember the name, initials, address, occupation, and phone number of everyone you meet.

YOU CAN remember appointments, price lists, statistics, diagrams, plans, numbers, folio pages, quotations, etc.

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RADIO CLUBS

A SCHOOL CLUB

At a recent meeting of the students of the Canterbury Intermediate High School it was decided to form a radio club.

For some time an intelligent interest has been taken in the science, and the result has been the construction of a suitable receiving set. It was hoped that the formation of a club would increase the knowledge of radio and extend the interest to other students at present not interested. A start was made with weekly meetings and



Mr. C. W. Mann, science teacher and radio enthusiast, Canterbury Intermediate High School.

daily buzzer practice. Master R. Lane, the newly elected president, was successful in making a vario-coupler set on the circuit outlined by Mr. J. G. Reid in *Sea, Land & Air*, and on a trial being given at the school numerous stations were heard. An aerial has been constructed, and a licence applied for. The club hopes that the new year will see increased activity, the aim being to arrange for a comprehensive programme of lectures from prominent wireless experimenters. A number of enthusiasts from the senior clubs have promised assistance, and the Secretary, Mr. Jack Quirk, is confident that in a very short

time the district will boast a network of radio clubs.

The driving force behind the club is the science teacher, Mr. C. W. Mann, who is a radio enthusiast. Commencing with a four-wire aerial, 140 ft. between spreaders, and 31 ft. high, and a complete "Expansion" crystal set he had no difficulty in picking up Adelaide and Melbourne time signals and Press news from Awanui. Signals have also been received from Amalgamated Wireless, Burwood Radio and Mr. Charles Maclurcan—when the latter was using only nine watts—over a distance of 6 miles. Mr. Mann used a galena crystal and a silver wire for cat whisker, and swears by Brown's 'phones. At the present time he is working a single-valve regenerative circuit, and is obtaining good results on radio-tron and "QX" valves. He attributes a very large measure of his success to good aerial, good earth and good 'phones.

Mr. Mann's experiment in forming a High School club is one that might well be emulated by other High School teachers. Doubtless many of the teachers are already interested in the science, and the interest of the pupils would follow as a matter of course once they obtained a preliminary peep into the wonders of radio telegraphy.

* * *

Metropolitan Radio Club.

The question of perfecting arrangements for the forthcoming trans-Pacific tests was discussed at a meeting of the above Club, held on December 20 at the Laurel Café.

After the ordinary business had been disposed of Mr. Malcolm Perry addressed the meeting on the subject of the tests, and pointed out the necessity of every experimenter co-operating along the lines indicated in the circular recently distributed by the committee controlling the arrangements.

Mr. Atkinson, in proposing a vote of thanks, endorsed Mr. Perry's remarks, and suggested that special lectures might be given on the subject of short-wave reception.

Mr. Marsden, who seconded the vote of thanks, told the members that it was up to all of them to carry out the requests con-



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tained in the circular, *i.e.*, either enter for the tests or see that their station is closed down during the time signals will be received.

* * *

Balmain to Have a Radio Club.

Mr. P. G. Stephen, of 69 Phillip Street, Balmain, would be pleased to receive the names of those persons interested in radio and desirous of joining up with a club to be formed in Balmain.

* * *

Leichhardt and District Radio Society.

The 11th general meeting of the above Society was held at the Club Room, Annesley Street, Leichhardt, on Tuesday December 19.

The Secretary announced that the committee had been successful in securing larger and more adequate accommodation in a hall in Johnstone Street, Annandale.

The first hour of the evening was spent in "Questions and Answers," following which a lecture on magnetism was given by Mr. Stevens.

Mr. Zech, Honorary Secretary, 145 Booth Street, Annandale, will be pleased to receive enquiries re the above club.

* * *

PERSONAL.

Mr. Marsden spent the Christmas holidays on a motor tour inland, taking with him a portable receiving set, and obtained some very good results.

Mr. Charlesworth, of Haberfield, has been carrying out some experiments, using U V 202 Radiotron valves as amplifiers. He has obtained some very good results.

Mr. Marks, of Electricity House, has just erected an experimental receiving station at his home in Rose Bay. He is doing some excellent work.

Mr. C. W. Mann, of Arncliffe, and master of physics at the Canterbury High School, has taken up the study of wireless.

Dr. Shellshear, a pre-war experimenter, has just returned to Sydney from an extended trip abroad.

Mr. L. C. Kerlin, Hon. Secretary of the Queensland Division of the Wireless Institute of Australia, recently spent a few weeks holiday in Sydney.

Mr. W. E. Wilson, President of the M.I.O., has been elected President of the Kuring-gai District Radio Society. Mr. Wilson has a first-class receiving station

at his home, and is a very keen experimenter. He recently enjoyed a brief holiday at Sussex Inlet.

Mr. A. R. Harris, a prominent wireless experimenter of Christchurch, New Zealand, some little time ago spent a few days in Sydney and conferred with the Honorary Secretary of the Wireless Institute in reference to forming a wireless club in Christchurch.

Mr. J. C. Rice, grazier, of "Moombril," Holbrook, has taken up the study of radio. He intends shortly installing a small transmitting set, and would like to get into communication with other experimenters in his district.

Mr. O. F. Mingay, Honorary Treasurer of the Wireless Institute of Australia (N.S.W. Division) has been elected to the committee of the Kuring-gai Wireless Club.

W. Finney, Esq., President of the Queensland Division of the Wireless Institute, accompanied by Mr. L. O. Kurlin, Honorary Secretary of that Division, spent the first fortnight of January holidaying in Sydney. Several conferences have taken place between these gentlemen and Mr. Phil Renshaw, Hon. Secretary of N.S.W. Division. Much good is expected to result from the visit regarding the Institute's Queensland activities and radio in Australia generally. Both have since returned to Brisbane.

The following members of the Institute (N.S.W.) are known to be taking part in the trans-Pacific test, *viz.*, Messrs. Maclurcan, Reed, Cooke, Stowe, Mingay, Hinton, Wilshire, Charlesworth, Cooper, Marsden, Best, Hilton and Renshaw. They are working in groups in order to attain maximum efficiency.

Mr. H. Rigby Gregory, a member of Institute Council (N.S.W.), has returned from Tasmania, where he has been convalescing after his recent long illness.

Mr. W. F. Bardin, of South Townsville, Queensland, a member of the N.S.W. Division, has been granted a transmitting licence.

Messrs. Frank Leverrier, K.C., and Spencer Nolan, both Past Presidents of the Institute, and still actively associated with its affairs, are preparing for the trans-Pacific tests.

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Wireless in Papua

(Continued from Page 859.)

good results obtained by the wireless equipment of the expedition.

Writing in the Sydney *Sun*, Captain Hurley stated:

"I can scarcely express the great value which wireless has been to the expedition. With the co-operation of Port Moresby and Thursday Island wireless stations great hazards have been avoided, and much time has been saved."

Throughout the expedition Captain Hurley utilized his set for the sending of Press news and private messages.

The success of the radio side of the expedition was chiefly due to the operation of the company's organization throughout the Commonwealth and New Guinea. Six months ago it would have been impossible to have arranged such complete working owing to the then divided control of Australia's wireless organization.

Technical Details.

The wireless installation for Captain Hurley was supplied in three units, receiver, transmitting apparatus and motor alternator, the largest unit being the transmitter, 15-in. x 12-in., and it weighed only 36 lbs. The set was designed to make it as portable as possible, and the internal connections were so arranged that to put it into operation only necessitated joining these three instruments by wires.

The transmitter was a Marconi type, 800-cycle, quenched gap, the connections being of the direct coupled type employing pancake inductances, adjusted to transmit on 600 metres. The set will operate without any adjustments except

that of the aerial circuit, which is altered on the variometer principle by changing the relationship of the coils. The coils provide for a wave-length variation of from 100 to 650 metres.

Resonance is shown by a hot wire ammeter situated in the aerial lead. The condenser is of the Dubilier type, made to stand 100 per cent. overload.

On the transmitting box an emergency carborundum crystal receiver is also provided. This being automatically tuned to the same wave as the transmitter, the change from transmitting to receiving can be made by insertion of a plug.

The power is supplied by a 800-cycle self-excited alternator, having an output of 250 watts at 110 volts, direct coupled to a D.C. motor operating from a primary source of 32 volts.

A special P.I. receiver, employing an Expanse "B" valve, was supplied for long-range working. The set was installed in the *Eureka* with an aerial approximately 50 feet long and 40 feet above water.

The results show that signals of strength 7 were regularly received in daylight hours up to a distance of 350 miles, and all the Australian coast stations and ships to a distance of well over 1,000 miles were also brought in. The aerial consisted of two legs of four wires each, arranged on the squirrel cage principle.

Captain Hurley states that the aerial current was such that the aerial ammeter went beyond calibration, which on these sets is marked up to two amps.

A New Telephone Receiver.

We have just been submitted a new single-head telephone receiver, made by S. G. Brown, Ltd., of London. This receiver, although primarily designed for land line telephone work, will give excellent results with crystal sets, and is ideal for the beginner. The headband is exactly similar to the type supplied with Brown's adjustable diaphragm receivers, and two sets can

be easily linked together by simply removing the ear pads. The case is constructed of highly polished aluminium, with a finely finished earcap, and the diaphragm is made of stalloy iron. The should be extremely useful where it is desired to connect a number of telephones in series. The agents are Australelectric, Ltd., 97 Clarence Street, Sydney.

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SHORT-WAVE AMPLIFIER

(Continued from Page 857.)

quency component. As regards efficiency, this type of amplifier does not rank very high, and except for purposes where freedom from distortion is of great importance other methods of coupling the valves are employed.

The higher the impedance of the coupling element the greater the amplification per valve, and if it could be made infinitely great one hundred per cent. amplification would be secured. As previously pointed out, even with a resistance of 100,000 ohms in circuit, the voltage of the plate battery had to be raised to two or three times its normal value. In excess of this resistance it will not be found economical to go, owing to the extra cost of the battery power involved.

If a solenoid of high inductance but low ohmic resistance is used in place of the non-inductive resistance there is but a negligible drop of voltage, owing to the direct current component of the plate current, but for the fluctuations due to the signal current the impedance is very high. If the inductance of this coil is twenty henries or more it will repeat the voltage variations with very little distortion, especially those above about 200 cycles per second. Owing to its impedance varying with each change in frequency, the amplification of the various tones in music and speech will not be a faithful reproduction of the impressed voltage, but where not more than two stages employing this coupling are used this will be hardly noticed. An impedance of this value can be constructed by winding on ten to fifteen thousand turns of No. 44 S.W.G. enamel wire on a soft iron core $\frac{1}{2}$ -in. diameter and three inches long. The coupling condenser and the grid leak remain the same as in the resistance pattern.

Transformer coupling constitutes the third method of handing on the energy from valve to valve. Detailed instructions concerning the construction of these transformers and also telephone transformers were given in the January issue of "Sea, Land & Air." A great improvement is often made in signal strength by putting a small negative potential on the grids of the amplifier tubes and increasing the voltage on the plate. The negative potential can be obtained either by means of a single dry cell, a potentiometer or a connection as shown in Fig. 3, whereby the potential drop in a small resistance due to the filament current is made use of. Disconnecting the filament terminal lead of the secondary of the transformer will cause a slight negative potential to build up on the grid of the amplifying valve, giving the desired increase of amplification, but when a particularly strong signal is received the negative charge often builds up faster than it can leak off, with the result that the valve is put out of action and remains so for several seconds. Strong static impulses will have the same effect.

Where several stages of audio-frequency amplification are employed a quick method of changing from one valve to the other is to fit telephone jacks across the primaries of the transformers or intervalve impedances and connect the telephone to a plug, which is inserted into the different stages as required. The connections for this are given in Fig. 3.

Signals to be amplified at audio-frequency must first of all have a strength in the detector sufficient to be readable in the telephone receivers, otherwise they are likely to be drowned out by the battery and other noises always evident in this class of receiver. For very weak signals there is nothing to compare with radio frequency amplification before detection. The strength of the signal in the telephone receivers varies as the fourth power of the voltage impressed on the grid, and, according to experiments carried out by H. J. Van der Bijl, he found that the ordinary detector tube (without a condenser in series with the grid and depending only on the shape of the plate current curve for rectification) used in conjunction with a telephone receiver requiring 3×10^{-12} watts to produce the least audible signal, required a signal voltage of 0.025 volts on the grid. It may be assumed, therefore, that to obtain a readable signal it is necessary to impress on the grid of the detector tube a voltage (high frequency) of between 0.01 and 0.05 volts.

The same method as used for audio frequency amplification, namely, resistance, reactance capacity, and transformer coupling, can be employed, but owing to the very high frequencies it is necessary to deal with in short-wave reception changes in the construction will have to be made. Referring to Fig. 2, it will be seen that in shunt with the high resistance in the plate circuit of the first valve is the grid circuit of the following valve. Between the elements of this valve a small capacity exists, and taking into account the stray capacities of the other apparatus connected thereto its value may be put down at about 20 cms. At a frequency of 750,000 cycles per second, corresponding to a wave length of 400 metres, the impedance of this small condenser will be very nearly 10,000 ohms, and as it is parallel with the high resistance the effective value to the radio frequency currents will be the joint impedance of the two. Even with an infinite resistance in place of the 100,000 ohms unit the impedance of the circuit cannot be increased above the 10,000 ohm limit. This means that for very short waves there will scarcely be any amplification at all. As the wave length is reduced the position is made worse.

At first sight the prospect of decent amplification of short-wave signals seems hopeless with this small impedance, but by means of a finely variable inductance such as a variometer in the plate circuit in place of the high resist-

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ance this capacity can be put to good use in tuning the inductance to resonance with the received waves. The impedance of the combination then reaches a very high value, which can be calculated from the formula $R = (2\pi f L)^2/R$, where L = inductance in henries and R_0 = ohmic resistance of inductance coil. (This assumes a perfect condenser.) The lower the resistance of the inductance coil the greater the amplification obtained, but at the same time the selectivity is made sharper and the tuning becomes more difficult. Between the two valves a coupling condenser must be used as in the circuit for audio amplification, but as the frequency is very high its capacity need only be about one or two hundred centimetres (0.0001 to 0.0002). Owing to the tuning of the plate circuit of the first valve, it will have a tendency to oscillate similarly to the regenerative receiver in Fig. 1. To prevent these sustained oscillations the decrement of the circuit must be increased to such a value that it is just sufficient to stop them. The handiest means of doing this is to apply a slight positive potential to the grid of the amplifier tubes by means of a potentiometer shunted across the filament battery. If the filament resistance controlling the amplifier tube is connected in the negative lead as shown in the diagram the potentiometer will be capable of supplying potentials between two volts negative to four volts positive with regard to the negative end of the filament. This will cover all the values required in ordinary receiving circuits. If several valves are used as radio frequency amplifiers the grid leak resistances should be led to the slider of the potentiometer, while that of the detecting tube connects to the negative end of its filament. Another method of preventing the amplifier from breaking into self-oscillation is to wind the intervalve chokes with wire of a high specific resistance, such as No. 44 Eureka or smaller. This reduces the sharp resonance effect when the plate circuit is tuned to the incoming wave, and makes it respond to a slightly wider band of frequencies than when copper wire was used. Its great drawback, however, is that the amplification is greatly reduced, necessitating additional valves for the same signal strength. Commercial amplifiers, such as the Marconi seven-valve pattern, are built upon this principle, and are very stable in their operation.

The third type of coupling is the transformer method, which employs inductive coupling between the valves. The plate coil is tuned to resonance with a small condenser, and the secondary is coupled tightly to it. A turn ratio of one to one is used on these transformers. They are no more efficient than the

choke coil pattern when tight coupling is employed between the two windings, but if the primary and secondary are loosely coupled and individually tuned the amplification and selectivity are very marked. For this coupling a vario coupler or short-wave loose coupler should be used.

The tendency of this type of amplifier to oscillate is even more pronounced than the choke pattern, therefore, closer control by means of the potentiometer is necessary.

For the reception of continuous waves the receiver can be made to oscillate by coupling the plate circuit of the detector to the secondary of the receiver. Owing to the intermediate amplifier valve, this coupling will be extremely critical, and weird noises are likely to be generated by the receiver. An external heterodyne allows the receiver to be used in a non-oscillating condition, which is best for the amplifiers, but as valves and spares are not too numerous in the average experimental station other means whereby all the valves can be pressed into useful service will be welcome. If the plate circuit of the detector valve is tuned as in the regenerative receiver shown in Fig. 1 it will oscillate upon its own without influencing the rest of the circuit. The reaction adjustment is now no more critical than when a single valve was employed. Apart from the more stable regeneration which is obtained, the great advantage of this method is that the aerial is not energised by the oscillations in the detector circuit, and as a consequence interference with other stations on the same wave length due to radiation does not take place.

For use in the forthcoming tests to determine whether it is possible to transmit signals across the Pacific Ocean from the United States to Australia, the writer cannot too highly recommend a circuit of this character (see Fig. 4). The amount of energy sent off in the form of electromagnetic waves increases as the wave length is lowered and comes near the fundamental of the aerial, therefore, every care should be taken to see that no direct or accidental coupling exists between the aerial circuit and any of the auto or heterodyne coils. Every experimenter should make sure that these conditions are complied with on his station during the period of the tests. For the sake of the other stations listening in do not operate any form of single-valve oscillating receiver.

This article has dealt with the problem of amplification in a general way, and in a later issue the writer will give concrete examples of various types of receivers and amplifiers that will add to the fascination of radio experimenting.

Mr. L. R. Hewitt, a Vice-President of the Institute, has been appointed chairman of the Radio Clubs Association of Australia.

Mr. J. P. Cureton has returned from a three months' visit to the United States.

Dr. Bonwill, of Cowra, was in Sydney during the Christmas holidays.

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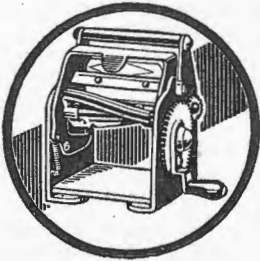
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LISTENING IN WITH THE HOME FOLKS

(Continued from Page 855.)

and desired to present a radio authority to the Forum, to further the case of broadcasting in the city of homes.

Mr. Sarnoff gladly consented to speak on the "Commercial and Social Influence of Radio," and held an audience of 3,000 people silent with eager attention as he described how broadcasting is bringing new interests into the lives of the women-folk of households all over the country, arousing their interest in many important civic, educational and cultural subjects of which previously they had been hardly aware. A striking demonstration of broadcast reception by means of a loud speaker illustrated Mr. Sarnoff's remarks.

DIVERSE EXAMPLES.

"Dinah is so much happier since we bought another loud speaker and put it in the kitchen for her," says Mrs. Smith.

"My illness has not permitted me to walk for more than five months," said Mr. Pattengill. "You can imagine how I listened daily to broadcasting."

Mrs. Suburbantown decides that it is her turn to give a party. All her neighbours have done something unusual this season to make their evenings more than a mere night of games and talk. What shall it be? She suddenly remembers the radio set. George has been begging for a loud speaker. "Son," she calls upstairs, "if we bought a loud speaker could you have it working by Tuesday night?" "Sure, I could," is the excited response. And out go the invitations for a radio evening. "Mr. and Mrs. Suburbantown are giving a musical party on Tuesday night. Paul Whiteman's orchestra will play, and songs will be rendered by Madade La De Dah, Signor Vermicelli and Senor Madrido," says the local paper, and the local paper is right because that happens to be the radio programme for that evening.

Si Hopkins, out on the farm, sticks another piece of wood in the old cast-iron stove, puts on his headphones, turns on the switch and listens. He hears the programme of the distant stations, giving the day's quotations on the produce upon which Si and his farm depend for their

existence. He hears the time signals, and for the first time in his life his farm is run by a clock that is accurate.

He hears the weather reports, and sometimes he hears an urgent warning of an impending storm, a warning that reaches him by radio in time for him to make all possible preparations that will minimize the damage and possibly prevent any injury at all being done by the approaching storm. Si hears lectures by leading government experts, and by professors of agriculture in his State college on the subjects in which he is interested. He hears the latest popular music. He hears the classics interpreted by artists who never would venture in person into the places where their voices now are spread by radio.

What is radio? Can anyone define it? It escapes analysis. It can't be limited, pinned down, blueprinted. There is only one frame big enough to hold a picture of even a part of it, and that frame consists of the seas and boundary lines that form the limits of the United States. Only a portion of the picture is within that frame, which is not big enough for the whole, as radio dashes far over the boundaries of the United States.

And so it must be said that radio defies all attempts to analyze it, to make it fit in one single plan or scheme. Radio broadcasting is a combination of the many hundreds of broadcasting stations and of the many hundreds of thousands of broadcast receivers. The whole is enormously complicated and very great. Its greatness lies in the home.

The American home is a radio home. Radio shares its benefits with all who can listen. It is not niggardly, but (*concludes the writer in "The Wireless Age"*) spreads its talents to the four winds, and more and more are those who are fortunate enough to have received sets sharing them with others.

Human beings take a lot of trouble and spend a great deal of time learning little fool things which later they try in vain to forget.