

"SEA, LAND and AIR"

THE AUSTRALIAN NATIONAL MONTHLY

— OF —

TOPICAL INTEREST

Edited by M. DIXON.

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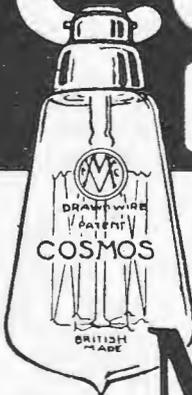
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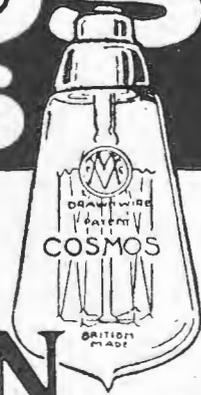
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SEA LAND AND AIR

AUSTRALIA'S
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Month by Month

A NATIONAL LOSS.

THESE was something about the personality and work of the late Henry Lawson that rendered his death not only a national loss, but a personal bereavement to those who knew him intimately. It is an unfortunate fact that the majority of people nowadays refuse to recognize the value of a poet's work—they look upon it as the product of an idealist, and quite unsuited to playing any useful part in the everyday affairs of life.

This view is as regrettable as it is wrong. We would be a dull and decadent people indeed if our natures were so hardened and our feelings so unresponsive that they refused to see and feel in the work of a poetic genius (such as Lawson undoubtedly was) the index of a character far removed from many of the mercenary and sordid things of life. To the credit of Australians be it said that they were ever ready to pay tribute to the work of the late lamented poet, even if they were sometimes inclined to forget the existence of the man. It is a regrettable fact that in latter years there is a growing tendency to wait until a man dies before acknowledging what a really great figure he was. It cannot be said that Lawson was without friends—he boasted many friendships, which sprang as much from a love of his gentle, poetic nature as from an admiration for the vivid pictures of Australian life which he painted in evergreen verse. At the same time, it must be admitted that there was some justification for the

censure which one writer passed when he wrote:

"The homage some refused the man they render to his clay."

Henry Lawson was the true champion of rural Australia, and his stirring songs of bush life did much to infuse thousands of young Australians with a love of the care-free life of the "great outback." He was able to picture the life in its true colours, because he had lived it. Always in the confines of a great city his heart pined for the peace and quietude of the great open spaces, where he, like many other Australians, have spent their happiest days. Whatever monument may be erected to his memory, it can never hope to be as eloquent and enduring as the man's own lovable nature and the genius of his work.

ADVERTISING AUSTRALIA.

THE statement made by Mr. Oscar Asche that Australia's interests in England are suffering because of a lack of knowledge on the part of those whose duty it is to give information to callers at Australia House probably contains more than a germ of truth. It is not to be expected that the High Commissioner himself, or even some of the high officials associated with him, can interview the thousands of people who call during the course of each month seeking information. The obvious course, therefore, is to ensure that those whose special task it is to interview these people should have a

wide and sympathetic knowledge of Australia. The most effective solution of the difficulty would appear to be the appointment of Australian clerks to answer inquiries about our land and its possibilities at Commonwealth headquarters in England. When an analysis of the position is made, however, one is forced to admit that there are many thousands of people in Australia whose ignorance of their own country is almost as dense as that of their kinsfolk overseas. Of the thousands of men in any of the capital cities of Australia capable of filling the position of interview clerk, how many possess even a smattering of knowledge of the possibilities and requirements of country life in Australia? The answer must be "Very few." Furthermore, how many city workers have any sympathy with the trials and hardships of the man on the land? It is worse than folly to induce any man to settle on the land under the belief that the work is easy and requires no special knowledge, and that a handsome living is assured. When immigrants are brought here cherishing these delusions dissatisfaction, acute disappointment and a bad advertisement for Australia are bound to follow.

These considerations, however, should in no way foster the idea that the task of inducing the right kind of immigrants to come to Australia is a hopeless one. There *are* men who have the necessary knowledge and understanding to make ideal immigration agents abroad, and there *must* be in the British Isles many thousands of men and women of the right stamp to make a success of rural life in Australia. If these two can be brought into contact with each other the result must inevitably mean a steady stream of people to these shores and an impetus to settlement and production, upon which Australia's future depends.

FUTURE OF RADIO.

A CASUAL glance at the history of radio telegraphy and an impartial survey of the progress it has made during the past few years affords convincing proof that the universal adoption of this wonderful discovery is now beyond question. During the comparatively brief period in which it has loomed large in the public eye radio telegraphy and telephony

has achieved a number of remarkable results. Like all new discoveries or inventions, it had in the first instance to meet and overcome the doubts and prejudices of an incredible people. Radio proved its worth by serving humanity in its darkest hour—the hour when vessels were being battered to pieces on some inaccessible coast, or swamped in mid-ocean, and the crew were standing helplessly by waiting for the final moment when they would be summoned to Eternity. It was in cases like this that the magic spark demonstrated its supreme usefulness to the needs of humanity, and tens of thousands of people are to-day prepared to acknowledge their indebtedness to this wonderful discovery. How much greater the death roll would have been and how many more hearts would to-day be mourning the loss of loved ones if radio telegraphy had never been discovered is something that can only be guessed at. It occasions no surprise, therefore, to know that a discovery which has had the hall-mark of approval placed upon it for such conspicuous service to humanity is destined to play a great part in the fields of commerce, industry and even our home life of the future. Wireless transmission of sound is to-day recognized as the great annihilator of distance so far as communication is concerned. It will be but a short time until Australia realises what a valuable asset long-distance wireless will prove in enabling her to attain a more influential position in world affairs. The 'splendid isolation' of the past will soon cease to exist, and in matters of trade, defence and immigration Australia stands to reap decided benefits. Not content with conquering the broad fields of commerce and industry, radio has now entered the home, and in the near future thousands of drawing-rooms and firesides in Australia will be enlivened by musical and vocal selections broadcasted for the entertainment of the public at large. What better evidence could be forthcoming of the masterful manner in which "radio" has conquered the world?



VALE — HENRY LAWSON

WHERE winds from open leagues of sea croon softly through the night,
The Poet sleeps, serene in peace, to wait the Dawn of Right.
And silent though his magic song, and dumb his minstrelsy,
The echo of his verse will ring through all Eternity.
The simple, touching themes he sang, the truths he bravely taught,
Unheeded while in life he strove, now he is gone are sought,
And those who, careless, went their ways in bustling city marts,
Perchance now read his wondrous lays and hold them in their hearts.

He sang the song of Hope we hear in crystal mountain streams
That plash and play in forest depths where filtered sunlight gleams;
And wandering fragrant breezes waft his message o'er the plain
To help the lonely outcast his lost manhood to regain.
The careless, sun-bronzed drover, by his camp-fire in the bend,
Hears, with the brooding river's chant, the music inter-blend
Of Lawson's saddest, gladdest songs, and though the days be drear
With drought and heat, his heart revives with courage, calm and clear.

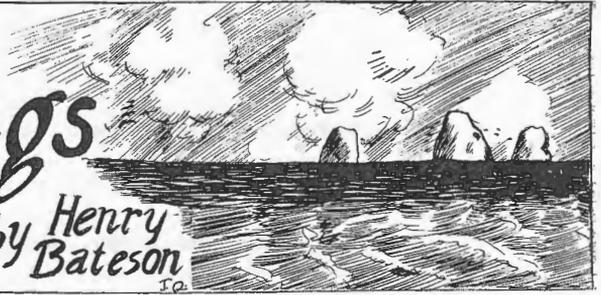
In all the squalor of the town but he the gold could find;
In all the harsh ways of the bush he saw but what was kind.
The simple deeds of simple folk he gloried by Romance,
And showed how humble task might be heroic deed, perchance,
The luring mystery of the West he fashioned into song,
And into noble hymns of Right he transformed bitter Wrong.
Australia's purpose he expressed in stirring martial strain—
The heart-throbs of a Nation born with pangs of human pain.

Let gentle breezes sweeping from the plains out in the West
Sigh through the murmuring she-oaks where, at last, he takes his rest;
Let bush-birds chant a requiem in the sparkling, gilded noons,
When the surf sobs on the beaches, and the sea-stream gently croons;
Let fragrant incense drifting in from camp-fires far away,
Perfume the winds about his grave, when dusk has dimmed the day;
He needs naught else to mourn him through his long, last slumbering hours
But echoes of the bush he loved, its rains and winds and flowers.

GORDON BENNETT.

The Three Kings of Death

by Henry Bateson

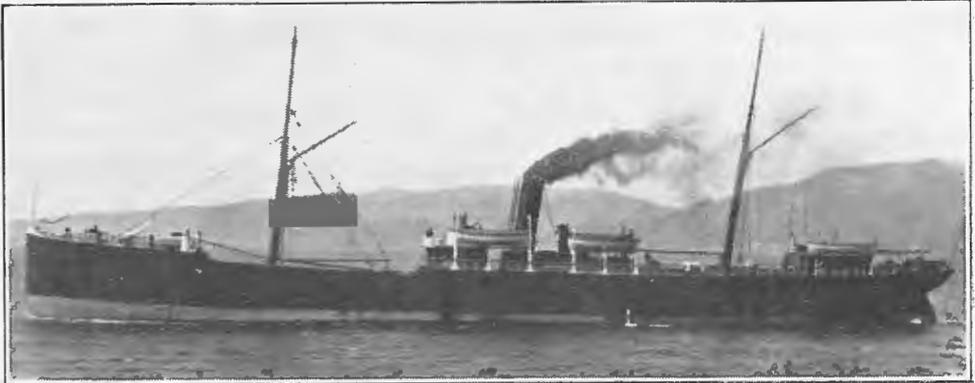


Beyond the white
Of Maria Light,
And the red on Columbia Shoal,
Where the long, clean seas come stamping in—
Stamping in, tramping in,
With slow resistless roll—
The Three Kings stand
And levy deep-sea toll.—WILL LAWSON.

THE Three Kings lie thirty-two miles to the north-westward of Cape Maria Van Diemen, the north-western point of the North Island of New Zealand. They are a small cluster of rocky islands, eight miles in length, with jagged points just hidden by the giant rollers. That they have proved the graveyard of many a splendid sailer and many a throb-

mysterious disappearances it could solve!

It is extremely probable that many of the vessels which have sailed from a New Zealand or an Australian port, but which never reached their destination, have ended their careers on the jagged, hidden rocks. But only two vessels are definitely known to have come to grief on The Three Kings of Death. Both of these were steamers.



The "Elingamite," which was wrecked on the Three Kings in 1902.

bing steamer there is little doubt, but the extent of the death-toll they have levied is unknown. No matter what the size of the steamer that crashes on to the Three Kings, the sweeping rollers and the jagged, ripping rocks leave but few traces of their dastardly work. If only one of the Kings could speak! What awful stories of marine tragedies it could relate! What

The *Elingamite* was pounded to bits there in 1902, while the *Elberland* was lost in the same spot in 1906.

But the deep-sea toll of the Three Kings is going to be greatly reduced in the near future. The Minister of Marine for New Zealand is seriously considering the advisability of placing a light on the Three Kings to warn mariners of the dangers of

this little group of rocky, uninhabited isles.

The Marine Department is faced by many difficulties in connection with lighting the Kings. A light can hardly be placed on the Main King, as the Western King would prevent it from being seen far out to sea in that direction, while the physical features of the Western King make it impracticable to erect a light on that island. Fogs are prevalent in the locality of the Three Kings, and this is another factor which has to be taken into consideration. The question of whether the light should be a high one or a low one has also to be determined. Of course, this will largely result on the location of the light. If it has to be placed on the Main King the light will have to be a high one on account of the position of the Western King, and it is possible that a high light will not serve its purpose as well as a low one would. The frequency of fogs may render the light worse than useless at certain periods of the year, and it may be deemed necessary to install a powerful fog signalling apparatus. The cost of providing a light will be very great. The actual erection will cost between £50,000 and £60,000, and in addition there will be the cost of maintenance and upkeep and the salaries of at least three lighthouse-keepers.

It is an open question if, in view of the large expenditure involved and the difficulties which have to be overcome, it would not be better to erect a radio beacon instead of a lighthouse. Of course, vessels might not be equipped with the necessary position-finding instruments, but in the event of such a beacon being erected on the Three Kings it is pretty certain that the regular passenger vessels trading between Australia and Auckland would be fitted with the necessary instruments. In the meantime the Marine Department is obtaining all the data that it is possible to gather. An engineer of the Public Works Department is now visiting England and the Continent, and he will make the fullest investigation into the question of obtaining a radio beacon. It is probable that on the next visit of the *Tutanekai* to the Three Kings men will be sent to go further into the matter, and to draw up plans for the erection of a lighthouse. Already the Marine Engineer has paid a visit to the locality.

Meanwhile the Sydney steamers show the respect they hold for the Three Kings of Death by taking a few hours longer than is absolutely necessary on their weekly trips in order to keep clear of the jagged rocks and swirling eddies.

WAIROA FALLS, N.Z.



The Wairoa Falls, besides being exceptionally beautiful, are among the largest in N.Z.

A NIGHT IN A CANNIBAL VILLAGE

WHERE SUPERSTITION AND TREACHERY STILL REIGN

END OF A PAPUAN TOUR

By H. L. DOWNING

This article is a continuation of Mr. Downing's highly interesting story of his trip through the wilds of Inland Papua. It tells in simple language of the dangers and attractions of exploring a country which abounds in Nature's charms, and, incidentally, man-eating savages.—Ed.

Friendly Savages.

The following day, after climbing for some hours around the great spur from Quaifa, we dipped into another creek. Here we lunched and rested awhile, as a preliminary to making the steep 1,500-foot ascent to the village of Kaivala. Part of this was already visible, and we could distinguish about fifty natives, all armed, clustered on one of the lookouts and taking stock of us. These natives were not hostile, which was a fortunate thing for us, for in spite of our arms some of us must have fallen an easy prey had they wished to be nasty. As it was, they came leaping down the mountain side to meet us, and helped to carry our swags to the top. It was a long and dangerous climb, and we were thankful to get it over.

We pitched our tents in the centre of the village, and, after attending to the carriers and making sure that a guard was unnecessary, we got out our blankets and enjoyed a well earned rest. As usual rain had begun to fall heavily at 6 o'clock but this did not prevent the curious mountaineers from crowding round the ends of the fly and interesting themselves in us. This we did not object to, for they were not only friendly, but intelligent, and seemed pleased to help us get a little information from them. After a time we got to showing them our watches, compasses, match boxes, etc., but what stirred their enthusiasm most was a powerful electric torch. This, when first flashed upon one of them, caused a great howl on his part, and was the occasion for hilarity

among the others. It was some time before we could persuade any of them to take the torch in their hands and press the button. When one did overcome his timidity he enjoyed flashing it so much that he was loth to part with it.

Our few hours at Kaivala were among the pleasantest of the whole six weeks. The natives were so friendly that our guard was relaxed for the night. At this time we were travelling at altitudes varying from 7,000 feet to 9,000 feet, and the weather most of the time was far from being tropical. The nightly temperatures were down as low as 55 degrees, and in spite of fires, blankets, etc., our carriers suffered rather keenly, and were all taken with colds. This, combined with the fact that they were much afraid both of the strange and warlike tribes, and the evil spirits which they all believe live in the mountains, made them a dejected and miserable lot.

An incident, which was amusing and yet pathetic, happened one cold morning a few days before we began to descend to lower levels. Humphries, who was always astir first on account of having to supervise the issue of the rice to the carriers and the rearranging of swags, etc., found, upon going outside, that neither of our two boy cooks had yet put in an appearance. He called for some time without avail, and was beginning to wonder if something serious had happened, when a pathetic-looking individual painfully drew himself through the small opening in one of the vacated huts nearby, and came labouring up to

where Humphries stood. He would have been standing silently there still, but for the annoyance and vigour with which Humphries fired into him with questions. "What's the meaning of this, Kauri? Why you no light-em fire? What's wrong with you; where's Api?" "Ah, Tabada (master)," he whimpered, "debil, debil, he come last night and hit me. He hit Api, too; Api he go die along-a house. Bye and bye me die, too; me sick." Humphries knew too much about natives who develop "debil debils" to show anything like sympathy, whilst at the same time he was mindful of the queer and unshakable be-

back by "debils," and had got his countryman (Kauri came from the same village, and, consequently, shared the same superstitions) to cut his back to let the "debil debil" get away. We concluded that what he really had got was a touch of something resembling muscular rheumatism. However, what with the hacking about and the fright they had given themselves, neither of them were good for anything for the rest of the trip, and two of our spare carriers took over their jobs with marked success.

After being temporarily lost for a couple of days, through the treachery of our



A picturesque native village built in the water.

liefs which at times take possession of these simple-minded creatures. "Kara haraga (be quick), make em fire or big fellow debil debil will hit you, you bushman." Then, turning to his orderly, an intelligent police-boy, who, hearing the rumpus, had come upon the scene, he said, "Dengo, you come with me, and see what's wrong with Api." Being interested, I joined the party, and we made for the same hut from which Kauri had come. There, lying face down upon the floor, groaning as hard as mortals could possibly groan, lay Api. He was rolling from side to side, and we noticed that his back had been scratched with some sharp implement, and was bleeding freely. In between the groans Api informed us that he had been hit in the

mountain guides, we came on to a long and high razor-back range, called the Pole. Here we experienced another adventure which might have had evil consequences had it not been for a rare flash of intelligence on the part of one of the chief actors.

Trouble Threatens.

One night, instead of pitching our flies within the cleared space of one of these mountain village enclosures, we decided to camp on the outskirts of the place. The villagers were a very dirty lot, and clearly demonstrated that they resented our intrusion and mistrusted us. They took great care in hiding all their women and children from our view, and never moved about without their spears and small native axes.

These unfriendly signs caused us to put a stronger guard around our tents during the night, but nothing happened. Early next morning we were making our usual preparations to continue our journey, when several armed villagers came across and interested themselves in our movements. They were almost pigmies in stature, but very wiry and deep-chested. Our carriers, who were unarmed apart from their long-bladed knives, treated them with great respect and suspicion, but somehow one of these tribesmen made friends with our boys, and became generally useful and amiable. We set off in the usual way along the narrow strip of track, and had gone about half a mile, when a great babbling and noise considerably alarmed the rear of our party. There, on a little hilly eminence about two spear throws length behind were assembled fifty or more of these native warriors. They were following us, and appeared greatly agitated. Taylor, accompanied by several of the police who were in the centre of our line, dropped back with myself and two other police boys. We made signs to the on-coming mountain men to retire, but beyond stopping them for a few minutes our efforts were in vain. The position looked as though trouble was imminent, when the cannibal who had attached himself to us dropped back and set up a yelling and gesticulating, which in a few minutes had the desired effect and changed the aspect of things. Our police, by means of an interpreter, gathered that it was a case of misunderstanding. The natives had been labouring under the impression that we were trying to take away their kinsman with some sinister purpose in view. The man proved a real friend and guide, and did not like leaving us.

A Lofty Ascent.

The next morning the camp was astir at the usual hour, and our carriers set out most unwillingly for the almost impossible country which lay before us. Since leaving Quaifa we had been travelling across the country, and not with it. First, we had to negotiate part of the great Kunimaipa watercourse, and then across a long range at almost its highest part (7,500 feet). It was a case of going straight at it, and over spur after spur, whose dips might be any-

thing from 500 to 2,000 feet. This strain steadily began to tell upon the carriers and ourselves. In spite of the fact that the former's loads were daily becoming smaller and were being spread more evenly among them, the fatigues of the journey and the cold and wet were having a bad effect upon both their physical and mental condition. Our guide gone, we had now to depend upon our own shrewd observations and an ordinary, though dependable, mariner's compass. We had a map, which, though a help, was not altogether reliable. Upon several occasions a couple of our police boys went silently on ahead of the main body, and in their own Papuan fashion pounced upon some unoffending cannibal whilst he was in the act of setting his traps, or as he loped unawares along some narrow track, and brought him as a prisoner to Humphries. The object was to use the man as a guide until we knew for certain where we were. Our intentions were good, but those of the captives were usually bad, and our plans failed miserably. Whether they disapproved of the rough manner in which they were made prisoners, or whether they felt humiliated at being handcuffed to a policeman and led in front of the party, it is impossible to say, but none entered into the spirit of the thing as we wished. Unlike our friend Arweena, they made no effort to understand our wants, but seemed rather keen upon misunderstanding them, for frequently we were taken along the wrong tracks.

An Unfortunate Accident.

Our travelling was now almost without incident, and we had begun to congratulate ourselves upon getting so far on without serious mishap, when an accident happened, which proved our conclusions to be premature. The boys were travelling in the usual single file, and were climbing round a particularly nasty and steep corner, when one, who was carrying several bottles of sealed acid and methylated spirits, slipped and slid about fifteen feet down the hillside. The fall in itself only slightly bruised the boy, but unfortunately one of the bottles of sulphuric acid got broken, and the contents splashed all over the poor carrier. Not feeling any immediate burn from the acid, but knowing that



A Papuan war canoe.

something was wrong, the boy, who could not have been more than sixteen, made for the nearest mountain stream and tried to wash the acid off. It was undoubtedly the worst thing he could have done. One of the other carriers who saw the accident helped the injured man down to the stream, and then dropped back to the rear and told what had happened. We made for the sufferer as quickly as possible, and were not a little dismayed at the sight he presented. The burnt parts of his brown skin were almost white, and the poor fellow was suffering considerably from shock. His injuries called for immediate attention, but as the medicine chest was being carried by a couple of fresh men, who were well up with the van, we had to resort to some handier aid, which might bring ease and arrest the burning action of the acid. Breaking open one of the tucker boxes, we came across our last unopened tin of butter. Every ounce of this was smeared over the boy's body, and as an emollient was a success. Everything possible was done for the patient, and the big supply of bandages and ointment which we brought away with us and thought we would have to take back unopened was used up, with several of our own singlets. The burnt skin began to break away in a couple of days, and, in spite of every effort, the raw flesh quickly became infected by the unhealthiness of the climate, and the patient showed increasing signs of distress. We were seriously contemplating laying the invalid up in one of the villages with a few of his friends and a couple of policemen, whilst another small section made post-haste for the big inland mission station at Marfulu, when we unexpectedly came in sight of Deva Deva, and Marfulu

we knew must now be only about twenty miles distant. The country was opening up a little, so we decided to push on.

Friends in Need.

The journey was accomplished in two days, and the patient was able to receive first-class attention from a generous missionary and two sympathetic self-sacrificing sisters of mercy. Our whole party was welcomed most hospitably, and how we all appreciated such kindness may be better imagined than described. Three days were spent in resting at this inland haven of refuge, and on the morning of the fourth we set forth feeling much repaired in body and easier in mind. The track from Marfulu to the coast was very easy going after what we had been facing. Though rough, a well defined path has been cut through the mountains, which does the missionary fathers great credit. In places this path is almost worthy of being called a road; it links up several important mission stations, and practically extends from Onenge and Marfulu, which are mountain stations at 7,000 feet and 5,000 feet, down



A mountaineer's grave.

to the coast, a distance of approximately 65 miles. Our journey down took four full days, and as we embarked in our frail canoes for Yule Island my aches and pains and itches seemed to subside for the time being, whilst I mentally reviewed the whole trip, and longed to have it over again.

WHAT NEW STATERS WANT

THE RIGHT OF SELF-DEVELOPMENT

HOW PROGRESS CAN BE ACHIEVED

By VICTOR THOMPSON

(Honorary General Secretary of the Northern New State Movement)

THE New State Movement is not out for Unification!

A delusion widely held in Sydney is that the North and Riverina, and, in fact, all the various New State movements in existence in Australia—there are ten altogether—are aiming mainly at a form of unification. All our literature has been “dead” against unification. Our first great Northern New State Convention held at Armidale in April last year discussed unification with the published scheme, and a full criticism to go upon, and there was not one friendly voice for it.

In the north during the last two years we have addressed public meetings in practically every town and village, and have invariably explained unification, and described our objections to it.

The Riverina New Staters began by considering unification as the most practicable scheme, but, like ourselves and all others who closely studied this extraordinary proposition, they soon discovered it was full of pitfalls for rural communities, and, indeed, for Australia as a whole. Our objection, summarised, is this:

Objection to Unification.

Unification as proposed is designed arbitrarily to sub-divide Australia into so

many provinces, each with a local legislature of the status of a glorified shire council, and with very little more powers than are possessed by shire councils. These toy legislatures are to have plenty of local governing freedom, but not the necessary powers to ensure local development.

The constitutions of these provinces are to be designed and granted by a great central legislature, consisting of about 100 members, without the supervising influence of a Senate or second chamber. It is easy to imagine that the party behind the proposal contemplates the perpetual ownership of this single-chamber and all-mighty legislature, which will have unlimited powers over the small and innocuous provincial councils.

But even so, we object to the scheme on a larger ground. We say that it means that the party which, for the time being, captured the central legislature, would im-

pose its party view-point on the provinces in every vital respect; and that, instead of being free to develop their own local affairs in the way most suitable to themselves, the provinces would be tied hand and foot to the great legislative chariot.

Unification, as proposed, would divide Australia into 31 provinces, the majority of them unpopulated, and mere happy



Mr. Victor Thompson.

hunting-grounds for centrally-appointed officials. Australia would, in fact, be full of Northern Territories, with their concomitant Darwins.

The New Staters propose a gradual sub-division, in accordance with the population necessities of the present and future. All empty areas would be territories until such time as they had sufficient people and resources to assume the responsibility of self-government.

Full Constitutional Control Wanted.

But the New Staters want more than gradual sub-division. They are out for absolute constitutional control of their own areas, with the privilege of framing their own constitutions to suit their local needs. They do not, however, deny for a moment that if this plan is to be successful the powers or functions which the New Staters shall have must be expressly stipulated in an amended Federal Constitution.

Local Control of Railways.

Take the railways as showing the basic idea of the New Staters. We say that all local lines, or the lines within the State, should be controlled by the local legislature. Railways are the arteries of our communities, so that if we surrender the control to a central power we paralyse our local initiative, both in construction and control. Why should not any State resort to private enterprise railways in its own area if it wants to? The main lines, which are semi-national, could easily be subjected to joint control by the States and the Federation to assure the avoidance of inter-State friction. Absolute central control is dangerous; and, in any case, why should not the States be able to prevent the Federation from mismanaging the main

lines, and perhaps running them contrary to the interests of the people in the area to which they belong?

In the North we find our producers sending their goods 500 miles by a round-about route to Sydney at a heavy loss. We find the Tablelands and North Coast, separated by only 100 miles, effectually isolated from each other—compelled to trade by bullock team. We also find that our four ports are useless to us, because the railways go past them, or miles away from them, in order to take all northern trade and traffic to Sydney.

New Staters stand absolutely and irrevocably for control of their local railway lines, as otherwise their local development will be paralysed.

Public Debt Not Insuperable.

The question of the public debts seems to terrify our critics, but it does not frighten us. What does the North receive for its share of the indebtedness now? It is carrying its share of the interest bill, and has not one tittle of voice in the expenditure of the money. For the last 20 years the entire area has remained stagnant; and

to-day it is losing population. For nearly 50 years it has been denied its vital railway communication between the Tablelands and Coast.

Even if the New State were unfairly burdened in the apportionment of the debt, it would be infinitely better off than it is now, when it is burdened haphazardly, and has nothing whatever to do with the raising or the spending of the money.

The North is taxed to pay interest on a debt that is of no tangible benefit to it!



Dr. Earle Page, M.P., an enthusiastic "New Stater."

Are We to Stagnate?

The question is: Are we to stagnate or get further in the centralisation mire, because we are afraid to tackle the job of cleaning up the financial mess—a mess made not by the contry people, but by the respective city-dominated parties, which have used loans in a spirit of prodigality simply with the object of bidding against each other for place and power?

Vital Education Factor.

The educational aspect is responsible for making more New Staters in the North than any other. As fast as our boys and girls grow up they drift off to Sydney, either for higher education or the commercial opportunities which their primary education has made available to them.

Why Worry About Frills?

We say that the Parliamentary dress which the States choose to wear is their own concern, and in no way affects the issue of New States. If one State likes to have a lot of tinsel, the people in that area only will have to pay. If another wishes to be plain and practical, the people in that area will benefit accordingly. But why make them all plain or frilly, according to the whim of a central legislature? Why not allow local notions to have free play?

Balance of Political Power.

With New States unhampered by the vested and political interests of the existing big cities we should soon have other cities springing up, as has been the case in all countries where the States have a free hand to develop themselves.

ROTORUA GARDENS, N.Z.



The above photograph shows the beautiful gardens of Rotorua, the centre of the Hot Lakes district of New Zealand. These gardens are very extensive, and are well laid out with numerous walks, arbours, tennis, croquet and bowling lawns, and beautiful flower beds of all varieties. The buildings shown in the picture are the new bath buildings, at which visitors can obtain all classes of mineral water treatment. Tourists from all over the world visit these baths for the purpose of obtaining medicinal treatment, and the Government, in order to help such tourists, provides an excellent medical officer, who gives advice to visitors at the ordinary medical fee.



PHANTOMS OF PEACE

BY ZANE GREY

(Copyright)

DWIRE judged him to be another of those strange desert prospectors in whom there was some relentless driving power besides the lust for gold. He saw a stalwart man from whose lined face deep luminous eyes looked out with yearning gaze, as if drawn by something far beyond the ranges.

The man had approached Dwire back in the Nevada mining-camp, and had followed him down the trail leading into the Mohave. He spoke few words, but his actions indicated that he answered to some subtle influence in seeking to accompany the other.

When Dwire hinted that he did not go down into the desert for gold alone, the only reply he got was a singular flashing of the luminous eyes. Then he explained, more from a sense of duty than from hope of turning the man back, that in the years of his wandering he had met no one who could stand equally with him the blasting heat, the blinding storms, the wilderness of sand and rock and lava and cactus, the terrible silence and desolation of the desert.

"Back there they told me you were Dwire," replied the man. "I'd heard of you; and if you don't mind, I'd like to go with you."

"Stranger, you're welcome," replied Dwire. "I'm going inside"—he waved a hand toward the wide, shimmering, shadowy descent of plain and range—"and I don't know where. I may cross the Mohave into the Colorado Desert. I may go down into Death Valley."

The prospector swept his far-reaching gaze over the coloured gulf of rock and

sand. For moments he seemed to forget himself. Then, with gentle slaps, he drove his burro into the trail behind Dwire's, and said:

"My name's Hartwell."

They began a slow, silent march down into the desert. At sundown they camped near Red Seeps. Dwire observed that his companion had acquired the habit of silence so characteristic of the lone wanderer in the wilds—a habit not easily broken when two of these men are thrown together.

Next sunset they made camp at Coyote Tanks; the next at Indian Well; the following night at a nameless water-hole. For five more days they plodded down with exchange of few words. When they got deep into the desert, with endless stretches of drifting sand and rugged rock between them and the outside world, there came a breaking of reserve, noticeable in Dwire, almost imperceptibly gradual in his companion. At night, round their meagre mesquit camp-fire, Dwire would remove his black pipe to talk a little. The other man would listen, and would sometimes unlock his lips to speak a word.

And so, as Dwire responded to the influence of his surroundings, he began to notice his companion, and found him different from any man he had encountered in the desert. Hartwell did not grumble at the heat, the glare, the driving sand, the sour water, the scant fare. During the daylight hours he was seldom idle; at night he sat dreaming before the fire, or paced to and fro in the gloom. If he ever slept, it must have been long after Dwire had rolled in his blanket and dropped to rest. He was tireless and patient.

Dwire's awakened interest in Hartwell brought home to him the realization that for years he had shunned companionship. In those years only three men had wandered into the desert with him, and they had found what he believed they had sought there—graves in the shifting sands. He had not cared to know their secrets; but the more he watched this latest comrade, the more he began to suspect that he might have missed something in these other men.

In his own driving passion to take his secret into the limitless abode of silence and desolation, where he could be alone with it, he had forgotten that life dealt shocks to other men. Somehow this silent comrade reminded him.

Two weeks of steady marching saw the prospectors merging into the Mohave. It was naked, rock-ribbed, sand-sheeted desert. They lost all trails but those of the coyote and wildcat, and these they followed to the water-holes.

At length they got into desert that appeared new to Dwire. He could not recognize landmarks near at hand. Behind them, on the horizon line, stood out a blue peak that marked the plateau from which they had descended. Before them loomed a jagged range of mountains, which were in line with Death Valley.

The prospectors travelled on, halting now and then to dig at the base of a mesa or pick into a ledge. As they progressed over ridges and across plains and through cañons, the general trend was toward the jagged range, and every sunset found them at a lower level. The heat waxed stronger every day, and the water-holes were harder to find.

One afternoon, late, after they had toiled up a white, winding wash of sand and gravel, they came upon a dry water-hole. Dwire dug deep into the sand, but without avail. He was turning to retrace the weary steps to the last water when his comrade asked him to wait.

Dwire watched Hartwell search in his pack and bring forth what appeared to be a small forked branch of a peach-tree. He firmly grasped the prongs of the fork, and held them before him, with the end standing straight out. Then he began to walk along the dry stream-bed.

At first amused, then amazed, then pityingly, and at last curiously, Dwire kept pace with Hartwell. He saw a strong ten-

sion of his comrade's wrists, as if he were holding hard against a considerable force. The end of the peach branch began to quiver and turn downward. Dwire reached out a hand to touch it, and was astounded at feeling a powerful vibrant force pulling the branch down. He felt it as a quivering magnetic shock. The branch kept turning, and at length pointed to the ground.

"Dig here," said Hartwell.

"What?" ejaculated Dwire.

He stood by while Hartwell dug in the sand. Three feet he dug—four—five. The sand grew dark, then moist. At six feet water began to seep through.

"Get the little basket in my pack," said Hartwell.

Dwire complied, though he scarcely comprehended what was happening. He saw Hartwell drop the basket into the deep hole and carefully pat it down, so that it kept the sides from caving in and allowed the water to seep through. While Dwire watched, the basket filled.

Of all the strange incidents of his desert career, this was the strangest. Curiously, he picked up the peach branch, and held it as he had seen Hartwell hold it. However, the thing was dead in his hands.

"I see you haven't got it," remarked Hartwell. "Few men have."

"Got what?" demanded Dwire.

"A power to find water that way. I can't explain it. Back in Illinois an old German showed me I had it."

"What a gift for a man in the desert!" Dwire accepted things there that elsewhere he would have regarded as unbelievable.

Hartwell smiled—the first time in all those days that his face had changed. The light of it struck Dwire.

II.

They entered a region where mineral abounded, and their march became slower. Generally they took the course of a wash, one on each side, and let the burros travel leisurely along, nipping at the bleached blades of scant grass, or at sage or cactus, while the prospectors searched in the cañons and under the ledges for signs of gold.

Descending among the splintered rocks, clambering over boulders, climbing up weathered slopes, always picking, always digging—theirs was toilsome labour that

wore more and more on them each day. When they found any rock that hinted of gold, they picked off a piece and gave it a chemical test. The search was fascinating.

They interspersed the work with long restful moments when they looked afar, down the vast reaches and smoky shingles, to the line of dim mountains. Some impelling desire, not all the lure of gold, took them to the top of mesas and escarpments; and here, when they dug and picked, they rested and gazed out at the wide prospect.

Then, as the sun lost its heat and sank, lowering, to dent its red disc behind far distant spurs, they halted in a shady cañon, or some likely spot in a dry wash, and tried for water. When they found it they unpacked, gave drink to the tired burros, and turned them loose. Dead greasewood served for the camp-fire. They made bread and coffee and cooked bacon, and when each simple meal ended they were still hungry. They were chary of their supplies. They even limited themselves to one pipe of tobacco.

While the strange twilight deepened into weird night, they sat propped against stones, with eyes on the embers of the fire, and soon they lay on the sand with the light of great white stars on their dark faces.

Each succeeding day and night Dwire felt himself more and more drawn to Hartwell. He found that after hours of burning toil he had insensibly grown nearer to his comrade. The fact bothered him. It was curious, perplexing. And finally, in wonder, he divined that he cared for Hartwell.

He reflected that after a few weeks in the desert he had always become a different man. In civilisation, in the rough mining-camps, he had been a prey to unrest and gloom; but once down on the great heave and bulge and sweep of this lonely world, he could look into his unquiet soul without bitterness. Always he began to see and to think and to feel. Did not the desert magnify men?

Dwire believed that wild men in wild places, fighting cold, heat, starvation, thirst, barrenness, facing the elements in all their primal ferocity, usually retrograded, descended to the savage, lost all heart and soul, and became mere brutes. Likewise, he believed that men wandering or lost in the wilderness often reversed that

brutal order of life, and became noble, wonderful, superhuman.

He had the proof in the serene wisdom of his soul when for a time the desert had been his teacher. And so now he did not marvel at a slow stir, stealing warmer and warmer along his veins, and at the premonition that he and Hartwell, alone on the desert, driven there by life's mysterious and remorseless motive, were to see each other through God's eyes.

Hartwell was a man who thought of himself last. It humiliated Dwire that in spite of growing keenness he could not hinder his companion from doing more than his share of the day's work. It spoke eloquently of what Hartwell might be capable of on the burdened return journey. The man was mild, gentle, quiet, mostly silent, yet under all his softness he seemed to be made of the fibre of steel. Dwire could not thwart him.

Moreover, he appeared to want to find gold for Dwire, not for himself. If he struck his pick into a ledge that gave forth a promising glint, instantly he called to his companion. Dwire's hands always trembled at the turning of rock that promised gold. He had enough of the prospector's passion for fortune to thrill at the chance of a strike; but Hartwell never showed the least trace of excitement.

And his kindness to the burros was something that Dwire had never seen equalled. Hartwell always found the water and dug for it, ministered to the weary burros, and then led them off to the best patch of desert growth. Last of all, he bethought himself to eat a little.

One night they were encamped at the head of a cañon. The day had been exceedingly hot, and long after sundown the radiation of heat from the rocks persisted. A desert bird whistled a wild, melancholy note from a dark cliff, and a distant coyote wailed mournfully. The stars shone white until the huge moon rose to burn out all their whiteness.

Many times since they started their wanderings, Dwire had seen Hartwell draw something from his pocket and peer long at it. On this night Dwire watched him again, and yielded to an interest which he had not heretofore voiced.

"Hartwell, what drives you into the desert?"

"Comrade, do I seem to be a driven man?" asked Hartwell.

"No. But I feel it. Do you come to forget?"

"I come to remember."

"Ah!" softly exclaimed Dwire.

Always he seemed to have known that.

He said no more. He watched Hartwell rise and begin his nightly pace to and fro, up and down.

With slow, soft tread, forward and back, tirelessly and ceaselessly, the man paced his beat. He did not look up at the stars or follow the radiant track of the moon along the cañon ramparts. He hung his head. He was lost in another world. It was a world which the lonely desert made real. He looked a dark, sad, plodding figure, and somehow impressed Dwire with the helplessness of men.

"He is my brother," muttered Dwire.

He grew acutely conscious of the pang in his own breast, of the fire in his heart, the strife and torment of his own passion-driven soul. Dwire had come into the desert to forget a woman. She appeared to him then as she had looked when first she entered his life—a golden-haired girl, blue-eyed, white-skinned, red-lipped, tall and slender and beautiful. He saw her as she had become after he had ruined her—a wild and passionate woman, mad to be loved, false and lost, and still cursed with unforgettable allurements. He had never forgotten, and an old sickening remorse knocked at his heart.

Rising, Dwire climbed out of the cañon to the top of a mesa, where he paced to and fro. He looked down into the weird and mystic shadows, like the darkness of his passion, and farther on down the moon-track and the glittering stretches that vanished in the cold, blue horizon.

The moon soared radiant and calm, the white stars shone serene. The vault of heaven seemed illimitable and divine. The desert surrounded him, silver-streaked and black-mantled, a chaos of rock and sand, a dead thing, silent, austere, ancient, waiting, majestic. It spoke to Dwire. It was a naked corpse, but it had a soul.

In that wild solitude the white stars looked down upon him pitilessly and pityingly. They had shone upon a desert that had once been alive and was now dead, and that would again throb to life, only to die. It was a terrible ordeal for Dwire to stand

there alone and realise that he was only a man facing eternity; but that was what gave him strength to endure. Somehow he was a part of it all, some atom in that vastness, somehow necessary to an inscrutable purpose, something indestructible in that desolate world of ruin and death and decay, something perishable and changeable and growing under all the fixity of heaven. In that endless, silent hall of desert there was a spirit; and Dwire felt hovering near him phantoms of peace.

He returned to camp and sought his comrade.

"Hartwell, I reckon we're two of a kind. It was a woman who drove me into the desert. But I come to forget. The desert's the only place I can do that."

"Was she your wife?" asked the other.

"No."

A long silence ensued. A cool wind blew up the cañon, sifting the sand through the dry sage, driving away the last of the lingering heat. The camp-fire wore down to a ruddy ashen heap.

"I had a daughter," said Hartwell, speaking as if impelled. "She lost her mother at birth. And I—I didn't know how to bring up a girl. She was pretty and gay. She went to the bad. I tried to forget her and failed. Then I tried to find her. She had disappeared. Since then I haven't been able to stay in one place or to work or sleep or rest."

Hartwell's words were peculiarly significant to Dwire. They distressed him. He had been wrapped up in his remorse for wronging a woman. If ever in the past he had thought of anyone connected with her, he had long forgotten it; but the consequences of such wrong were far-reaching. They struck at the roots of a home. And here, in the desert, he was confronted by the spectacle of a splendid man—the father of a wronged girl—wasting his life because he could not forget—because there was nothing left to live for.

Suddenly Dwire felt an inward constriction, a cold, shivering clamp of pain, at the thought that perhaps he had blasted the life of a father. He shared his companion's grief. He knew why the desert drew him. Since Hartwell must remember, he could do so best in this solitude, where the truth of the earth lay naked, where the truth of life lay stripped bare. In the face of the tragedy of the universe, as revealed in the

desert, what were the error of one frail girl, or the sorrow of one unfortunate man?

"Hartwell, it's bad enough to be driven by sorrow for some one you've loved, but to suffer sleepless and eternal remorse for the ruin of one you've loved—that is worse. Listen! In my younger days—it seems long ago now, yet it's only ten years—I was a wild fellow. I didn't mean to do wrong. I was just a savage. I gambled and drank. I got into scrapes. I made love to girls. One, the sweetest and loveliest girl who ever breathed; I disgraced her. Oh, God! when I think of it. Not knowing, I left her to bear the brunt of that disgrace alone. Then I fell into terrible moods. I changed. I discovered that I really and earnestly loved that girl. I went back to her, to make amends—but it was too late!"

Hartwell leaned forward a little in the waning camp-fire glow, and looked strangely into Dwire's face, as if searching it for the repentance and remorse that alone would absolve him from scorn and contempt; but he said nothing.

III.

The prospectors remained in that camp for another day, held by some rust-stained ledges that contained mineral.

Late in the afternoon Dwire returned to camp, to find Hartwell absent. His pick, however, was leaning against a stone, and his coat lying over one of the packs. Hartwell was probably out driving the burros up to water.

Gathering a bundle of greasewood, Dwire kindled a fire. Then into his gold-pan he measured out flour and water. Presently it was necessary for him to get into one of the packs, and in so doing he knocked down Hartwell's coat. From a pocket fell a small plush case, badly soiled and worn.

Dwire knew that this case held the picture at which Hartwell looked so often, and as he bent to pick it up he saw the face shining in the light. He experienced a shuddering ripple through all his being. The face resembled the one that was burned forever into his memory. How strange and fatal it was that every crag, every cloud, everything which attracted his eye, took on the likeness of the girl he loved!

He gazed down upon the thing in his hand. It was not curiosity; only a desire to dispel his illusion.

Suddenly, when he actually recognised the face of Nell Warren, he seemed to feel

that he was paralysed. He stared and gasped. The blood thrummed in his ears.

This picture was Nell when she was a mere girl. It was youthful, soft, pure, infinitely sweet. A tide of emotion rushed irresistibly over him.

The hard hoofs of the burros, cracking the stones, broke the spell that held Dwire, and he saw Hartwell approaching.

"Nell was *his* daughter!" whispered Dwire.

Trembling and dazed, he returned the picture to the pocket from which it had fallen, and with bent head and clumsy hands he busied himself about the camp-fire. Strange and bewildering thoughts raced through his mind. He ate little; it seemed that he could scarcely wait to be off; and when the meal was ended, and work done, he hurried away.

As thought and feeling multiplied, he was overwhelmed. It was beyond belief that out of the millions of men in the world two who had never seen each other could have been driven into the desert by memory of the same woman. It brought the past so close. It showed Dwire how inevitably all his spiritual life was governed by what had happened long ago.

That which made life significant to him was a wandering in silent places where no eye could see him with his secret. He was mad, blinded, lost.

Some fateful chance had thrown him with the father of the girl he had wrecked. It was incomprehensible; it was terrible. It was the one thing of all possible happenings in the world of chance that both father and lover would have declared unendurable. It would be the scoring of unhealed wounds. In the thoughtful brow, the sad, piercing eye, the plodding, unquiet mood of the other, each man would see his own ruin.

Dwire's pain reached to despair when he felt this insupportable relation between Hartwell and himself.

Something within him cried out and commanded him to reveal his identity. Hartwell would kill him, probably, but it was not fear of death that put Dwire on the rack. He had faced death too often to be afraid. It was the thought of adding torture to this long-suffering man whom he had come to love.

All at once Dwire swore that he would

(Continued on Page 521.)

THE FERTILE LANDS AND BEAUTY SPOTS OF QUEENSLAND

THE STATE WITH THE BRIGHTEST FUTURE

OFFERS UNBOUNDED SCOPE FOR INVESTMENT AND PLEASURE

By T. C. TROEDSON

(Director Queensland Government Tourist Bureau)

Mr. Troedson, who is a native of Queensland, and only 43 years of age, joined the Public Service of that State in 1900, and was appointed Director of the Queensland Government Tourist Bureau on June 1, 1910. His ability and enthusiasm have since been directed towards enlarging the scope and usefulness of that department, with marked success. Mr. Troedson is an enthusiast in football and sailing, and has figured prominently in these two branches of sport. His article on the beauty and fertility of his native State will be found intensely interesting.—Ed.

“**A**S fertile in its soil and beautiful in its outlook as any place to be found anywhere,” so said the

late Hon. James Bryce, formerly British Ambassador to the United States, as he gazed from Montville, on the Blackall Range in South Queensland, and beheld the wonderful panorama of Nature's beauty and man's industry spread before him. And what was said at Montville is equally applicable to the many fertile regions and beauty spots scattered throughout the vast area of Queensland. To many southerners the great Northern State still remains practically a *terra incognita*. There is no reason why this should be so, for with the modern inter-State coastal steamship service offering, the fascinating north-eastern seaboard of Australia is brought within the confines of the busy city man's three weeks' sojourn from Melbourne or Syd-

ney. The whole trip is not only one of pleasure, it, in itself, is an education. What do they know of Australia who only Collins

and George Streets know? Would they wish to learn of the Great Barrier Reef, that mighty rampart protecting the coastline of Queensland (above Keppel Bay to Thursday Island) from the Pacific's mighty roll; of the great sugar industry of Queensland, linked up as it is with the policy of a White Australia; of the fertile tropical area of the Atherton Tableland, with its wealth of commercial timbers and prolific maize yields; of island scenery unsurpassed anywhere in the world; then let them plan a trip to Queensland, the accepted Winter Tourist Paradise of Australia.



Mr. T. C. Troedson,

Director, Queensland Government
Tourist Bureau.

The Call is: “Go
North.”

Leave the cold and
fog of the South land,

and bask in the warmth of Queensland's sunshine. By rail the tourist may travel from Melbourne right through to Mackay, 600 miles north from Brisbane, thence proceeding by steamer to Bowen, Townsville and Cairns. Should the choice be by steamer from Melbourne, the tourist is enabled to spend from 36 to 40 hours in Sydney. The sea voyage alone is one of the finest in the world. The trip across Moreton Bay on a morning when the sea is always calm and on the winding and picturesque Brisbane River is one of the traveller's delights.

banana. The charming setting of bay views and islands, intermingled with the well-kept farms of orchardists, affords a picture, the memory of which lingeringly remains. Within easy distance of the metropolis many delightful trips can be made. Nambour, 65 miles from Brisbane, is the handiest centre in Southern Queensland, where, from the months of August to December, the operations of raw sugar manufacture can be viewed. Handy also is the Blackall Range—the Blue Mountains of Queensland—with its townships of Montville, Flaxton and Mapleton, re-



The famous Whitsunday Passage, North Queensland.

In the increase of its population, which now numbers 218,000, the rapidly rising and growing city of Brisbane has advanced in the last ten years more than any other city in the Commonwealth. It will not be long before it ranks as the third city of Australia. The delight of every visitor to Brisbane is the glorious motor trip to Mt. Coot-tha, or One Tree Hill, where the finest panorama of city, bay and landscape to be obtained in the Commonwealth is unfolded—Mt. Lofty, near Adelaide, S.A., not excepted. Another delightful car trip is the run to Cleveland and the Redlands District, where the southern traveller obtains the first introduction to Queensland's luscious tropical fruits, comprising mango, papaw, custard apple, pineapple and

owned for their yields of citrus fruits and their all-the-year-round bracing healthy climate. Another delightful trip is that to Palmwoods, thence by tram to Buderim Mountain, by trap or motor car to Maroochydore, thence along the picturesque Maroochy River to Yandina. Southward from Brisbane the choice rests with Canungra or Tambourine Mountain. As yet undeveloped and bordering on New South Wales, is Queensland's National Park of over 47,000 acres—a great heritage and sanatorium for the people of Queensland. The views from this park are not surpassed anywhere in Australia. Due west, 100 miles from Brisbane, are the famous Darling Downs, discovered by Alan Cunningham in 1827, and comprising 4,000,000 acres of



Sugarcane growing near Bundaberg, South Queensland.

richest basaltic lands. To-day that area is one vividly green carpet of early wheat, affording a sight that train travellers never tire of gazing on. Further west again, the lighter soils of the Roma lands show wheat, vines and citrus fruits to advantage, while the far western lands of the Warrego are given over mainly to pastoral pursuits.

Back again down the Brisbane River, the course is set northwards past Sandy Cape, and the traveller now sails along the placid waters of the Queensland coast, flanked to the eastward by the mighty bulwarks of the Great Barrier Reef, and views in comfort the shimmering sea, dotted with islands—mountain peaks and ridges for the most part, rising sheer and rugged from the water with long, gleaming, white, sandy beaches and tall pines, through which the prevailing east winds whisper softly. The steamer travels close to the shore, and it can be seen that many of these islands, which range from half a mile to three miles in length, are supplied with springs, and have a plentiful supply of pasture; but there is no life on them, save the screaming seabirds hovering overhead. At evening the sea is alive with many varieties of bird life—chiefly the Torres Straits pigeon, a large black and white replica of

the domestic bird. They can be counted by the thousand as they wend their way nightly from the mainland to their nesting places on these lonely islands. They fly in groups of a dozen or so from all points until the islands are quite white in places with them. These pigeons are most suitable for the table, and offer good profit to the first enterprising party who visits the islands prepared to put them on the market commercially. Their numbers are inexhaustible, and they would provide shooting for a great period of the year to all the sportsmen of New South Wales and Victoria.

Monotony is unknown on that delightful northern voyage, for, with such pleasant company, how could it be otherwise. After leaving Brisbane the first port of call is usually Port Alma, the deep-sea outlet for the varied products of Central Queensland, with its rich pastoral lands of the west, its wonderful gold and copper mine of Mount Morgan, its meat freezing and preserving works and its rising cotton growing industry, which for the season 1922 returned 1,580 bales of cotton lint, averaging 520 lbs., of a total value of £58,000.

Fourteen hours after leaving Port Alma, anchor is dropped at Flat Top Island, where passengers are disembarked and

cargo lightered for Mackay, the sugaropolis of the North, which now has through rail connection with Brisbane, a distance of 600 miles. The embarkation and disembarkation are, at times, conducive to much merriment. Leaving Flat Top, and after passing the Cumberland Group of Islands, the steamer passes through that wonderful maze of seagirt islands forming the Whitsunday Passage, with which the name of that skilful navigator, Captain Cook, is so closely associated. The reading of *Cook's Voyages* is delightful and interesting at all times, but never until you make

sions may be made to Charters Towers, once famous as a deep reef mining city; or to Ayr, the sugar centre of the South (50 miles), and Ingham, the Northern centre (67 miles).

But the call is ever onward and northward, so when Townsville is left for Cairns the most pleasant part of the trip is entered on. Between these two points is the scenic Hinchinbrook Channel, which is more fascinating in its rugged grandeur than the Whitsunday Passage, through which the tourist has previously passed. Hinchinbrook Island, protecting the Passage to the



The picturesque Hinchinbrook Channel, North Queensland.

that Northern trip do you enter into the feeling of them and realise the impression that these islands must have made on the minds of those men who saw such scenes for the first time. To us to-day it brings back the words of Byron:

*The Isles of Greece! The Isles of Greece!
Where burning Sappho loved and sung,
Where grew the arts of war and peace,
Where Delos rose and Phoebus sprung;
Eternal summer glids them yet,
But all except their Sun is set.*

The next port of call is Townsville, the Capital of North Queensland, and busy shipping centre for the great pastoral and mineral country of North-west Queensland. A day's run by motor launch to Magnetic Island is thoroughly enjoyable. Excursions

eastward, is thirty miles long, and from a scenic aspect is one of the chief assets of North Queensland. The island is composed of broken and confused masses of hills, faced with precipices, interspersed with sharp, inaccessible pinnacles and furrowed by deep ravines and gullies. The whole is clothed in luxuriant vegetation right to the water's edge. The silver trails of the numerous waterfalls are reflected in majestic splendour as they meet the declining rays of the sun. And the glorious Northern sunsets, as seen in Hinchinbrook, would need the brush of the cleverest artist to paint adequately. Leaving the Channel, Mourilyan is also called at, and, at last, Cairns is reached.

Cairns, nestling on Trinity Inlet in its tropic slumber, is the show-place of North Queensland, or rather the district of Cairns is. Coconut palms, huge fig trees and masses of creepers indicate that the citizens do not lack appreciation of the beauty and value of foliage in their streets and about their homes. Away across the deep blue of the Inlet one sees the plumed palm fronds on picturesque Green Island, nestling on the fringe of the Great Barrier Reef, 18 miles from Cairns. Yachting parties from Cairns visit the island, and at low tide it is possible to walk on to the Reef and view the weird collection of sea denizens left stranded by the waters—the sight of the hundreds of huge clam-shells in itself being awe-inspiring. Luxurious tropical foliage abounds and tall coconut palms, in full bearing, stand out in bold relief right around the island, which is about a mile in circumference. Some idea of the importance of the port may be gauged from the fact that in 1920 Cairns exported 38,190 tons of sugar, 9,065 tons of maize, 407,456 lbs. of butter, over 20,000,000 super. feet of timber, besides minerals, comprising chiefly silver lead bullion, blister copper, tin and wolfram.

But Cairns is not the tourist's destination; it is merely a resting-place by the way. The mountain peaks, that are so clearly visible from the ship's deck, are calling to him, and he longs to climb to higher altitudes and investigate for himself the mysteries they hold. Up there is the Barron Gorge, the numberless cataracts and beauty spots that hitherto he has only seen in pictures and dreams, and Cairns, with all its attractions, must take second place. At first the line is flat, but interesting, for on both sides there is luxuriant tropical foliage, and at seven miles we reach Redlynch, at the foot of the Barron Gorge. Redlynch is the centre of a large banana-growing district; from the railway station large consignments of this favourite fruit are despatched, also quantities of papaws, granadillas and other tropical fruits. From Redlynch the ascent of the range commences; a change is noticeable in the character of the vegetation; the low-lying river flats are left behind, whilst the rare wealth and beauty of the tropical scrubs open to our view. As the train winds its serpentine course around and between the hills, we obtain glimpses of

mountain, valley, waterfall and gorge; whilst to the rear stretches a beautiful panorama of plain, coastline, sea and island.

At length Kuranda is reached, 21 miles from Cairns, usually the Mecca of the tourist pilgrimage to North Queensland. Nestling among the hills at a height of 1,080 feet, and within sound of the rushing waters of the Barron River, wending its eastward course to the sea, lies the pretty Kuranda Railway Station, with its red-tiled roof, its island platform, its "butterfly" pattern awnings, and its up-to-date appointments, the building being enconced in an artistic setting of tropical shrubs and plants. The wants of the tourist are catered for by a first-class hotel and boarding house, replete with every modern convenience, and a stay of a fortnight or more in such delightful tropical surroundings can be thoroughly enjoyed. Social life at Kuranda never palls. Among the more important sights to be visited the following claim attention: Barron Falls, Stony Creek and Surprise Creek, the coffee plantation, Rocky Hill view, Double Island Mountain, Milne Dell, Ferntree Gully and the Fairyland Tea Gardens, to any of which delightful trips can be arranged. No visitor to Kuranda should fail to visit the magnificent entomological collection of Mr. F. P. Dodd. It is admitted by the large numbers who have inspected the specimens that it is unsurpassed for beauty and variety outside some of the largest museums. The largest part of the collection has been made in the district. Mr. Dodd receives applications from collectors and museums in all parts of the world for specimens of North Queensland insects.

It is, unfortunately, a fallacy among modern-day tourists that, with the trip to Kuranda and the viewing of the sights thereabout, they have seen all worth seeing in the Cairns district. Stretching away some fifty miles to the south-west is the far-famed Atherton Tableland, the tropical garden of Australia, situated at a height of from 2,500 to 3,000 feet above sea-level. At the eastern end of the Tableland there are found two of the most remarkable lakes of Australia: Lakes Eacham and Barrine. These lakes are really the craters of extinct volcanoes, and are best reached from Yungaburra, on the Tolga-Malanda branch line, where excellent ac-



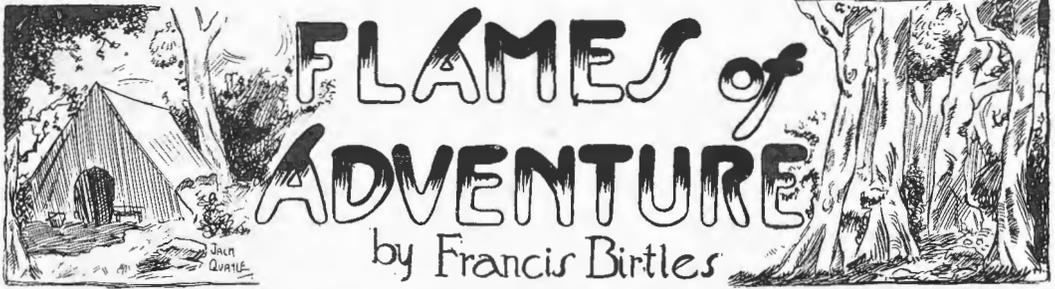
On a Queensland sheep station.

commodation is also obtainable. Lake Bar-rine, the larger of the two, is situated at a height of 2,420 feet above sea-level, and is approached from Toohey's Creek. Dense tropical foliage obtains to the water's edge, where the beautiful, clear freshwater reflects the manifold shades of the green tinge of overhanging scrub. Wild duck and other feathered game abound on the lake, the maximum depth of which has been estimated at 420 feet. Lake Eacham is situated at a height of 2,510 feet, and, though slightly smaller, is the more picturesque of the two. At its south-eastern extremity there is a beautiful cove with waters of the deepest blue, changing colour to harmonise with the passing clouds in the blue vault overhead. The banks and approaches are densely timbered, and the depth of the water is 220 feet.

At Tolga the Atherton Scrub is entered upon, and the pleasure of a drive through the well-tilled maize and dairying country can only be realised by those who have experienced it. For nowhere in Australia can finer sights of tasseling maize crops be seen than on this rich Atherton Tableland. As far as the eye can see, field after field of this crop is passed. In 1920 on the Tableland 15,479 acres produced 667,497 bushels of maize, an average of 42.12

bushels per acre, and representing one-third of the total production of Queensland. Its wealth of timbers also is amazing to the newcomer, just as their ruthless and wanton destruction by the settler is astounding. Still at Atherton all has not been seen of this wonderful district, so we proceed further west, through the tin-mining township of Herberton, until the town of Ravenshoe, the present terminus of the railway, is reached. From Cairns to Ravenshoe by rail is 103 miles, and from Ravenshoe the Millstream Falls are distant $3\frac{1}{2}$ miles, and the Tully Falls—more superb than the Barron Falls—are brought within 16 miles of the township. Ravenshoe is destined to come into greater prominence as a tourist and health resort, and already numbers of Cairns residents are taking advantage of its bracing climate by extended holiday visits thereto. The township is some 3,200 feet above sea-level, and is situated in open forest country on the north-western portion of the Evelyn Scrub.

Lord Forster (Governor-General), referring to his visit last year to the coastal towns and districts as far north as Cairns, said: "More beautiful country no man had ever seen from the scenic point of view, and it was beautiful also from the point of view of productivity."



The incidents recounted in the following story occurred during a special trip to Central Australia, made at the instance of the Commonwealth Government, in 1921.—Ed.

OWING to reports of the Murray, Darling and other Riverina rivers being in flood, I decided not to go to Central Australia via Adelaide or Swan Hill, so we motored from Melbourne in a powerful six-cylinder car along the Prince of Wales Highway to Sydney, thence across New South Wales to South Australia. Even by this route we had a rough time owing rivers overflowing their banks.

Along the railway line, and to the south of Oodnadatta, all the creeks and rivers were muddy torrents, roaring along to the mysterious regions of unexplored Lake Eyre. On boggy claypans we camped, 28 feet below sea level. A wide, flowing river obstructed our course. Up and down this we walked, seeking a crossing. A rocky bar gave promise of this, but a ten-foot high silted mud bank formed an unsurmountable obstacle. To the railway bridge we went. It was three-quarters of a mile long. There were three-foot gaps between the overhang of the

sleepers, with a forty-foot drop to the swirling waters below, and no protecting girders. Over this structure the car bounced and jumped, sometimes stopping dead as all four wheels jammed between

the sleepers, and then suddenly heaving out with a hair-raising jump. There were but six inches of space to spare on each side of the car. If a sleeper-end broke the car and my scared self would make a good-bye dive. Roy Fry, my companion, standing half-way across, was busily engaged watching the front wheels.

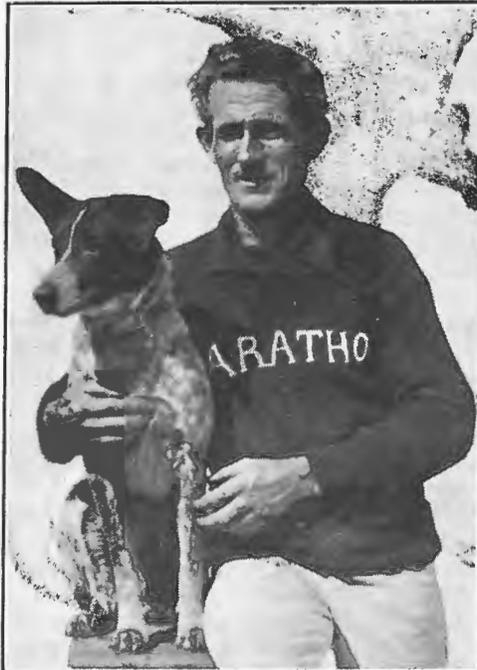
The front mudguards were on, so I could not see the actual position of the steering, but Roy guided me by signs with his hands.

The next few days these sensations were repeated over and over again, until the last bridge was encountered. At sun-

down this was reached.

Nearly Capsized.

A quarter of the way across an extra wide gap between the sleepers let the two



Francis Birtles and his dog.

front wheels go right down, the front axle resting on the rails. The nearside wheel was dangling free, hanging over the edge. For two hours we worked in the darkness with a hydraulic motor oil jack. Every time the lift commenced the greasy, slippery contraption would squirt thick oil up inside my shirt sleeve or into my face. Whilst scraping what seemed like a gallon of oil out of my earhole I slipped between the sleepers, and only my extended elbows saved me from a cold plunge into the bottomless soft mud below. A strong side wind was blowing, accompanied by sleet. We traversed this bumpy horror in the

delicacy, a tin of raspberry jam. He—the pup—greeted me with a low, rumbling growl. A few minutes later I went to my bunk, which was laid out on the ground, and found the oversized pup firmly planted in the centre of my bed. A savage growl and a glimpse of snarling jaws greeted me. Calling up Dinkum, my blue Australian cattle dog, I sooted him on. Amidst a swirling mass of mosquito net and blankets I caught a glimpse of the stern of the canine invader. Into this I vigorously planted my boot. With a deep, hollow roar the pup bolted for shelter underneath the car.



Moving Camp at Oodnadatta.

darkness of night. Of the hundreds of similar predicaments which we encountered and successfully overcame I will not detail. The written or spoken word is insufficient to describe them. The car, as long as the axles were not submerged, would always stick very much to the work.

At Oodnadatta we loaded up the car with benzine and stores, and about one hundredweight of dog—a fully grown Dane pup—in addition to its owner, a squatter, who wanted to go out to his way-back station two hundred miles away. At dusk forty miles out we camped on the Alberga River, where the mosquitoes greeted us in myriads. By the flickering light of the camp fire we dined. Hearing a sound of crunching and gnawing behind a bush, I went around and found the Dane pup had helped himself to one of Roy's case-hardened dampers and our special

In the morning we set our table again. I had put half of last evening's blanc-mange on top of the car, and well away from black ants. I took it down, and found it had a most peculiar spotted and mottled appearance. My companions were not looking, so I promptly dropped it and buried the mixture in the sand. Semi-cooked tadpoles were set into the cold, white jelly! I had in the darkness of the previous night mixed the cornflour with water from a nearby billabong! Whilst having breakfast the Great Dane, too, had his meal. He smelt, scratched up, and wolfed the shivery morsel.

On the road again, we pointed our radiator towards Central Australia. Around the base of a peculiar, huge, cone-shaped hill, topped with a square black cliff, our course lay. The hill was Crown Point Mountain. At the base of this the Finke

River was running strongly. This we had to cross. The three-foot-deep waters swirled along over treacherous quicksands, and half a mile away on the other side was a steep bank, over which the car must climb. Close by a blackfellow was camped with a donkey waggon. The team units were scattered about, feeding on the scrubby slopes. Two of these we managed to capture. Great was our faith therein. The car was standing a few yards away from the swift flowing waters, and shod with eight tyres, the addition being four spare tyres, fully inflated on detachable rims, and tied on with rope. Gently we led the mild creatures down to the front of the car and on to the water's edge, where we harnessed them up. The car was already overloaded, and soon we would be across. "*Gee up*"; the beautiful pair wagged their eighteen-inch ears and promptly went to sleep. "*Smack*" came a flat board on their ribs, weilded by a lusty nigger. Promptly they woke up, sat down on their haunches, ears wagging, and inquiringly admired the landscape across the river. To prevent them from straining their eyesight we shoved sugar bags over their countenances. With yells we bade them arise, and with sharp, jabbing nips "*Dinkum*" attended to their heels. Back-firing viciously, they accelerated rapidly—on the reverse—nearly into the radiator. A sugar bag fell off, and the animals came to a full stop. Realising that it was useless to persevere further with them, I made all the necessary precautions for driving the car into the stream. Sensing the danger of treacherous quicksands, I had already waded across and marked by means of log floats anchored with stones any dangerous spots, but these spots were continually changing. With a scared feeling, but well under control, I clambered aboard, minus most of my clothing. Running up the engine to get the mixture warmed, I let in the clutch. Quickly accelerating on low gear, the car waddled like a duck down the greasy bank and into the elements. Here it suddenly changed to the impression of an ocean-going battleship. Speed alone would keep the car from sinking. Down the swirling stream we raced, myself quaking with anxiety whenever we passed any floating log danger signs. At half a mile I was still going strong diagon-

ally across the stream, with the water over the floor boards. A mass of rubbish came tearing by, just missing the car. With a roar the engine opened out as the wheels gripped on to a firm sandbank. The car gained speed, and went full tilt up the bank, the front axlle striking the summit crest amidst a blinding, choking downfall of sand, dust and rubble. Once safely on the top I stopped the car in the shade of a tree and boiled the billy. In the meantime we carried our loading from the other side, and then, to take out the chill, had a sunbatl. Nearby an inquisitive, large, flat-footed policeman bird came pompously strutting around. We had no licence, no car number, no tail light, and an open exhaust. For old times sake I put him into the benzine tin cooking pot along with the boiling rabbit which the dog had captured. We had got over the river just in time. More floodwaters were coming down, and, as it happened, if we had not got across, we would have been stranded for weeks.

An Unexpected Flood.

Noonday found us to the north of Barrow Creek. Here, in the shade of a curragong, I tuned up the engine of my car. Roy, my overland companion, was busily engaged on bended knee in worshipping a god of the Never-Never—making a damper. This he energetically pounded and thumped into shape, and then shovelled it into a heap of hot ashes. In twenty minutes he can make that which it takes Dame Nature thousands of years to make—a stone. We lunch, and then, in fly-proof mosquito nets take a midday rest. Dull rumbles of distant thunder awaken us. With satisfaction I note that we are on the highest available ground. A sweeping storm passes across our track ahead, so we decide to camp for the rest of the day. Dusk, and giant masses of cloud sweep overhead, accompanied by chain lightning and terrific bursts of thunder. In the back of the car we camp under the hood, huddled up, and nearly smothered in the muggy, close atmosphere inside our mosquito nets. Outside in the darkness there is a strange, bubbling, hissing noise. I switch on the headlights. Pools of water lay on the ground. Stepping overboard, I sink knee-deep in water and soft mud. There has been no rain here, but some dis-

tant creek is running a banker, and the waters are seeping up from underground. The flood rises rapidly, and the floor of the car is soon submerged. In the blackness of night we feel for overhanging tree branches, and on these we hang our luggage and equipment. The uncanny outside darkness, the continual bubble-bubble, the voices of thousands of frogs, the myriads of insect pests, scorpions, centipedes and spiders, that invaded the car, combined with suspicions of snakes make me switch on the electric lights. Sleep was impossible, although we were tired through having had no rest the night before.

graph line. I left Roy to await my return. In order to nurse his appetite he had decided to sleep in all day and not weaken his strength, and also not to strengthen his hunger by futile attempts to find bush tucker. After some hours' travelling, I sighted in the far distance a group of sandhills. After swimming the fast-flowing current at their base I found some wild currant bushes. On the fruit of these I dined eagerly, and then camped at sundown. Next morning I filled the quartpot with wild currants and pushed on, finding the country quite dry. Thirstily I tramped, pushing the bike through sand and over



The camel track to Alice Springs.

A Hopeless Dawn.

The coming of dawn revealed a hopeless spectacle. All around us as far as we could see was a gleaming lake of water, above which a few tree tops stood lonely sentinels, their shadows reflected in the still backwaters. We were prisoners, and our food supply was limited to half a damper. A few small birds flitted about. Careful shooting with a 22 pea rifle gave us a breakfast of three painted finches, and what they lacked in quantity they made up in colour. For two days we endured our forced imprisonment, our only comfort being a fire, which we kept burning on the top of a big antbed. I overhauled my pedal bicycle, and decided to try and get to some habitation along the overland tele-

spinifex, being strongly tempted to deviate to some mountain ridges away to the west. On a hard, red claypan I found about a quart of water. This I soaked up with a piece of rag and squeezed into the quartpot and made a hot drink as a refresher. Still onwards I tramped, over rocky mountains, with running creeks, and after some hours Tennant's Creek Telegraph Station loomed indistinctly on the horizon. Here a few hours later the postmaster gave me a glorious feed, and, with a loaf of bread and some beef I started back immediately to my starving companion, some blackboys with more rations following behind. Late at night I camped, soaked through by a bitterly cold driving rainstorm. Taking some matches out of

my glass tabloid bottle, I lighted up the spinifex clumps, which burnt readily enough, made a big log fire, and lay down. In about an hour the natives arrived. The moon had burst between the lowering clouds, and in the far distance mobs of wild dogs howled, while nearby curlews wailed amongst the mulga scrub and niggers snored in their beds of sand. Morning, and I was again on the track. I made spinifex smoke signals, and before noon my hungry companion had already built up the fire on top of the big antbed. The floods had receded, but the ground was knee-deep in bog.

Whilst I had a look around for the hardest ground Roy demolished the bread and beef. The niggers came up, and we started to corduroy a track. The heavy travelling soon used up our supply of benzine. A few drums of kerosene had been brought along from Alice Springs. This I did not want to use whilst the car needed quick acceleration. Eventually even the small supply of petrol used for starting was all finished, and pure kerosene had to be used. Starting "from cold" was a tedious process. Oil had to be warmed

over a fire, radiator water poured in boiling hot, spark plugs each had a hot cinder placed alongside, sometimes even a hot spoon on which kerosene was vapourized and poured into the compression cups. Luckily I had plenty of thick engine oil, and this was changed frequently. The car pulled well on this pure mixture, but there was no flexibility of control. For over two months bog and flood was to be our lot. Such weather had never been experienced in Central Australia before. A week's hard work brought the car within sight of the telegraph station, just as we were down to the last drop of fuel. Half a mile away the supply ran out, and there we anchored, safe from floodwaters at least.

Owing to the impassable nature of the flood country to the north and to the south, it had been impossible for benzine, which had been ordered, to reach us. No horses or camels could traverse those regions. We heard a rumour that benzine might be obtainable at a deserted mining camp away to the east.

(To be Continued.)

A BUSH CINEMA.

A BUSH CINEMA is the title of an unpretentious looking little book of 95 pages (and some 50 illustrations), full of highly interesting bush lore, which every lover of nature should have.

Anyone desirous of "seeing snakes" can have his desire amply satisfied in looking over the many splendid types of Eve's original tempter, and considerable ingenuity must have been employed to secure the many remarkable reptilian photos with which the book abounds.

The author (who hides his identity

under the *nom de plume* of "Te Whare") has given a succession of lifelike pen pictures of native fauna, each presented in most readable form. Interspersed throughout the book are numbers of short stories of incidents, grave and gay, which have come under the author's ken when on his widely diversified wanderings.

We can recommend this little volume to our wide circle of readers, and feel confident that one and all will find both amusement and instruction therein.

We have pleasure in announcing that, after much trouble, and at considerable expense, arrangements have been completed for the publication in each issue of "Sea, Land & Air" of a complete short story by such world-famous, popular writers as Zane Grey, Rex Beach, William Le Queux, George Randolph Chester, etc. The first of the series appears in this issue. A Golf Section, conducted by that well-known authority D. G. Soutar, likewise becomes a feature of "Sea, Land & Air." Special attention is also given to the requirements of the ever-growing army of radio enthusiasts and experimenters.—Ed.



By D. G. SOUTAR

A Peep at the Past.

GOLF to Australians has almost assumed its true perspective. One occasionally meets a scoffer who sticks to the old tradition that golf is an "old man's game." He gets little sympathy, and the knowing smile again gets its opportunity. The knowing smile in golf is most expressive. The adherents of the royal and ancient game present a close Freemasonry towards beginners. They welcome every newcomer, but encouragement commences after his initiation. Golf is such a fine game that it can stand upon its merits. Recognition of that fact is universal, but Australia, being a world's outpost, has been the last to appreciate its beauty. The early history of golf in Australia is interesting. From the records available it would appear that the game was first played in Victoria. In the *Australian Golfer* Mr. R. A. A. Balfour-Melville writes: "Golf in Victoria was started at a very early date in the colony's existence, owing to the fact of so many Fifeshire boys having emigrated here. The late Hon. Jas. Graham, himself a Fifeshire boy, gave me some particulars of it. He said he could not quite fix the start of the club, as he had lost his books through changing his office. He had an entry of £2 paid to the Golf Club for subscription on August 31, 1847; so it was in existence then at least." In South Australia there is no known record prior to 1870. In 1869 Sir James Fergusson arrived in Adelaide as Governor of the colony, and being a Scotsman and keen golfer he soon took steps to induce others to join him in establishing his favourite pastime. A meeting was called in June, 1870, and the Adelaide Golf Club was then established. In

1873 Sir James Fergusson completed his term of office as Governor, and the loss of such a staunch supporter and enthusiast was a severe one to the club. The difficulty of obtaining clubs was great, and, in addition, cattle grazing on the course made great havoc with the greens and fairways. Keen golfers were few and tyros wanting altogether, the inevitable result being that the club died out by degrees, and in 1876 ceased to exist. In New South Wales the game was played about 1882 by a few enthusiasts on somewhat primitive links near the western side of the present Centennial Park and the Royal Agricultural Society's grounds. Their experience was somewhat similar to the clubs in other States. They struggled on until, on August 2, 1893, a meeting was held in Mr. Gerald Campbell's chambers, when the Sydney Golf Club was formed. Links were laid out on ground owned by Miss Walker at Yaralla, with the use of the lodge as a club-house. About June, 1894, the Sydney Golf Club decided to maintain a course of nine holes at Bondi North, and rooms were taken at an adjoining cottage for the use of the members. The course was short and very sporty, with fine greens. At this time the Australian Club was also doing well on links at Queen's Park. There were some fine sporting holes, and the housing arrangements were very complete. From all accounts it would appear that the year 1893 marked the true beginning of golf throughout Australia. Prior to that time the game had been played on any available ground, but from then onwards the increasing popularity of the game made it imperative for the clubs to own their grounds. Suitable country was sought out and purchased. The courses were laid out

with a greater degree of what was required for the improving standard of the players. In Seaton (S.A.), Sandringham (Vic.), Kensington and Rose Bay (N.S.W.) are links upon which a great deal of money has been spent, and which now compare favourably with the much older established courses throughout the world. Fine club-houses have been built, culminating in the palatial structure just built by the Royal Sydney Club at Rose Bay. Clubs have sprung up in all directions, but still the cry is for more. All the clubs around Sydney have full membership, with long waiting lists. An outlet will have to be found for the overflow. The experience of the Municipal Links at Moore Park is a case in point. A few years ago the idea of municipal links being a paying proposition would have been laughed to scorn. To-day Moore Park is the most coveted course around Sydney, and there is room for at least two other courses if suitable ground can be secured. The population on the north side of the harbour could easily support another club, while the metropolitan district is crowded beyond measure. Throughout the country the game has made great progress. At Orange, Albury, Cootamundra and Tamworth the links are the property of the clubs, while every seaside and tourist resort knows the value of golf links to the district. The question is not "Is it safe to establish golf courses," but is "find suitable ground for more courses."



Charlie Campbell,

The Leura professional, who won the Open Championship of Australia at the Rose Bay Golf Links on September 15. He played a brilliant game throughout.

MANLY GOLF CLUB

RECORD OF PHENOMENAL PROGRESS

THE record of the Manly Golf Club, which, in 1903, was titled the "Manly Golfers," with a membership of twelve—known as the "12 Apostles"—has been one of phenomenal progress.

Prior to this a love of the game had been fostered in Manly, thanks to the efforts of such enthusiasts as Mr. H. D. L. Woods, brother of the well-known cricketer, and Messrs. George J. Wilkinson, Arthur V. Hilliard and C. E. Wood. The playing

ground was located at Fairlight, on the harbour side of Manly. This was in 1901, but two years later the membership had increased as above, and the venue was moved to Farrell's Paddock, now built over, and through which run Pacific Parade and Alexander Street. The course was of six holes, but owing to the restricted space available the tees were in several instances placed outside the playing area. The length of the various holes was thus increased, and this, coupled with the fact that the

On the *MANLY* GOLF LINKS



Photos: M. Dixon.

(1) The Club House. (2) The figure on the extreme left is Chitty, a professional golfer; the other four comprise the Green Committee. Reading from left they are Messrs. Thos. Wall, G. J. Wilkinson, J. P. Hill and Dr. David Thomas. (3) Waiting for a clear drive.

scrub between the tee and the course was left standing, made very formidable hazards to be carried with the drive.

Even at that early stage the greens were admirably kept, thanks to the labours of some of the members, amongst whom Mr. J. E. Tonks deserves special mention. Mr. W. Hunter-Smith and Mr. H. D. L. Woods were the first captain and hon. secretary of the club respectively. The committee consisted of the whole of the members, three forming a quorum.

In 1905 it became apparent that it was but a matter of time until the march of the building trade dispossessed the club of its (then) links, and the possible extinction of the game in the district would most probably have followed had it not been that Dr. Roland J. Pope and Mr. Norman Pope came to the rescue by purchasing a large area of ground adjoining Farrell's paddock. The time and money expended

on this ground in transforming it from a heavily timbered swamp to the well laid out links which were available for play two years afterwards stands as an everlasting monument to the generous and sportsmanlike action of the Messrs. Pope, whom the club annually honour in a competition known as the "Founders' Cup"—donated by Thomas Hughes in appreciation of the great work they did for the game of golf in Manly.

In 1906 the game had become so popular and the number of applicants for membership had become so great that it was decided to form the Manly Golf Club. Dr. David Thomas was elected first president, with Dr. Roland J. Pope as hon. secretary. A year later Mr. A. V. Hilliard, who had done yeoman service in the interests of the club, was elected joint hon. secretary. In December, 1907, the Messrs. Pope invited the members of the club to use the present links as a nine-hole course, and in May,

1908, the eighteen-hole course was formally opened.

As might be expected, the task of inducing the grass to grow on the greens and fairways was no easy one, due to the salty, sour nature of the ground. That task was undertaken by Dr. Pope, who probably knows more about what is required to produce such an excellent result as he ultimately achieved than any man in Australia. To this very day many of the old hands who know the difficulties which confronted him still marvel at the success which greeted Dr. Pope's labours.

The first club-house was built almost simultaneously with the opening of the first nine holes for play, and from that day the growth of the club became so pronounced that its success was placed beyond all doubt.

has ever come into contact with him who is not prepared to pay a tribute to the whole-hearted manner in which he studies the interests of members individually and the game generally.

The "Secretaries' Day," which was suggested by Mr. Duret in 1910, has become an annual fixture, at which the secretaries of the metropolitan and suburban Golf Clubs, Golf Council and Country and Suburban Golf Association meet, and compete for the secretary's gold pen, presented by the Manly Club. In 1910 Mr. G. J. Wilkinson relinquished the duties of hon. treasurer, which he had ably conducted for four years, and was elected a vice-president. In 1920 he was elected president, and is deservedly most popular. He is number one on the membership list of the club, and was succeeded by Mr. R.



Messrs. G. J. Wilkinson (President), E. Duret (Secretary), and A. H. Uther, the three oldest members of the Manly Golf Club.

It is interesting to recall at the present day, when the roll of members numbers just on 600 and there is an ever-growing waiting list, that in June, 1903, a committee meeting of four members was held on a Manly ferry boat, at which certain ground was declared out of bounds. In the same year Dr. David Thomas was elected a member, and the first inter-club match in which Manly engaged was against Parramatta, where they scored a win. The club now holds a record of having twice won the triple-grade premiership in inter-club matches.

In April, 1909, Mr. E. Duret was appointed secretary—a position which he still retains—and there is not one golfer who

F. Wyley, who was followed by Mr. A. G. Symington, Mr. J. B. Ferrier and Mr. G. H. Bosch, who has acted for several years. As might be realised, honorary positions in a club of the size of Manly are particularly onerous, and it speaks volumes for the energy and unselfishness displayed by the club's officers that they have brought it to the proud position in the golfing world which it occupies to-day.

That the privileges of play offered to visitors at the Manly Golf Links are widely appreciated is evidenced by the fact that over 1,000 names are written annually in the visitors' book.

In 1917 the club was formed into a company, and arranged with the Messrs. Pope

to purchase the links, which are now the property of the club. A policy of improvement was early initiated, and has been continuously followed. The low-lying nature of the ground rendered better drainage essential, and what seemed insurmountable difficulties have been overcome. Open drains have been piped and made into sand bunkers, and finally the course has been remodelled and the disadvantageous practice of driving balls across public roads has been eliminated. To the Green Committee, and particularly to Dr. David Thomas and Mr. Thos. Wall, the club is very deeply indebted for ceaseless attention and time devoted to its interests in these matters.

On Thursday, September 7, the altered course was played on for the first time. Professional golfers from all parts of New South Wales, Victoria, South Australia, Queensland and Tasmania were present, and engaged in a 36-hole score competition. The consensus of opinion amongst them was that the new course was a "great improvement." C. Campbell, of Leura, created a professional record of 72 for the 18 holes, and the competition resulted as follows:—A. Le Fevre (Royal Melbourne

Golf Club), 1st with 148; V. James (Bonnie Doon Golf Club), 2nd, 149; and W. J. Clarke (Royal Sydney Golf Club), 3rd, 150.

The formal opening of the new course will take place on Saturday, October 7, when an open amateur stroke handicap will be played for a beautiful silver cup, donated by Dr. David Thomas, captain of the club. The club will also present a trophy to the player establishing the amateur record.

The reconstruction of the course has eliminated the old 10th hole, which occupied a six-acre paddock on the most elevated position on the links. This land will be released for sale, and has been subdivided for auction on the ground, probably towards the end of November. The higher portion of the land overlooks the whole of the links.

Not the least of the distinctions which attach to the Manly course is that it was the training ground of J. H. Kirkwood, the now world-famous golfer, who spent his early days as a caddie boy on the links there, and A. Le Fevre, the open Australian champion (1921) was at one time assistant professional on the Manly Links.

THE WANGANUI RIVER, N.Z.



THE WOMAN'S CORNER



FASHIONS BY FLICKS.

IN every little wayback town in the United States there are smart women; while they are young and still undeluged with the cares of housekeeping and large families, it is almost impossible to meet one who is not smart. In Oshkosh and Witcha Falls, in Lithopolis and Louisiana, Missouri, in the hide-aways of Minnesota, Iowa, and Ohio, the girls are fashion replicas of their New York sisters, or even the more up-to-the-moment Chicagoans. How do they do it? To the traveller it is an enigma.

They go to the movies!

Once these small town beauties were in the hands and at the mercy of the local dressmakers, usually inefficient and in experienced women, whose clothes art was not sufficiently advanced to allow of them setting up shop in the important centres. Those days are past. Now the cinema sets the fashions. Betty Compson, Marylyn Miller, Norma Talmadge and Gloria Swanson are the mannequins of the small towns.

Gone are the days when, a mode being established in New York, it travelled slowly across the continent and filtered into the backwaters per medium of the commercial traveller—called the drummer—and the elaborate catalogues from which mail-orders were listed. By the time it reached Lithopolis a fashion was already dead in the metropolis. Nowadays they say you can tell a small town girl's favourite movie star by the way she dresses. The whole country is strewn with imitation Irene Castles, Katherine MacDonalds and Clara Kimball Youngs.

But the tip is worth remembering if you live in one of those little towns that they have forgotten to mark on the map.

Next time you go to the pictures forget about that soulful kiss between Rudolph Valentino and the heroine of the hour, and note the cut of her summer gown. The sob stuff may thrill you for the moment, but the satisfaction of knowing how to sport the latest thing in dropped waists, the last word in bateau necks, and the correct angle of the ubiquitous movie panama later on is more than worth the entrance money. Take the pattern in your eye like the city "window shopper" does, and in your pretty gingham gown, cut to mode, and fashioned by the clever fingers we all know Australian women possess, you will be the sweetest thing on Main Street.

THE COURAGEOUS WIFE.

"Being a husband is a whole-time job," is a remark attributed to Arnold Bennett. "Being a wife is time and a half," said a wit recently, adding that "the sole function of a husband is to extract money from other people for his wife to diffuse; should the wife do the extracting, then there is no *raison d'être* for hubby." The sublime Milton taught us that "to study household good, and good works in her husband to promote" was woman's rightful position in space. Ah, well, other times, other customs! One cannot but admire the courage of a certain Englishwoman who walks the streets of London to-day as a "sandwich woman," bearing placards that advertise her artist husband's exhibitions of paintings, while he is busy catching the light in Switzerland and painting more landscapes.

LADY BOOKIE.

A well-known figure on English race-courses is Mrs. Vernet, the lady bookmaker, who bets almost entirely with women. She is quiet mannered and always well dressed,

with kindly eyes and a charming, though resolute, mouth. As a diversion from her "book-keeping," Mrs. Vernet plays bridge, and is a welcome figure in the most exclusive bridge clubs in London. Who will be our woman pioneer in the punting field?

ROSINA BUCKMAN.

Australia is always proud of her daughters when they come back to her with the hall-mark of European success. It is then that Mr. and Mrs. and Miss Suburbia roll up in force and sit on uncomfortable seats in the Town Hall, and demand more encores than any European audience would dream of asking; while a murmur passes from lip to lip: "Whoever would have thought it! Why, I went to school with her!"



Rosina Buckman is one example out of many. Rosina has made good; but it took a bit of doing, and in recognising the success we should not forget the courage behind it. She went to London on her own initiative, without public subscriptions to help pay expenses. For two years she lived that hideous existence known as "from hand to mouth." Her capital was less than one hundred pounds, and that was soon swallowed up in the London fogs. She waited in the dreary offices of concert agents day after day in the hope of scraping enough money to live on out of a few chance engagements to sing at afternoon receptions (where no one listens to you, but it helps to keep the conversation going!), or a popular Sunday night concert, where noise counts for more than art. At the end of the two years she met Melba, who had originally encouraged her in her venture, and through her she then obtained a hearing that was really worth while. Robert Courtneidge sponsored her in a freak

operatic season he held at the Shaftsbury Theatre in 1915. Rosina then left the chrysalis stage behind, and became one of the most notable of the flight of "Butterflies" that hovered over London. In Puccini's opera she made her first big success, and it led to subsequent engagements at Covent Garden: "The place I had previously known best as the district for buying cheap vegetables and a few pennyworth of flowers," admits Rosina.

PAPUA, THE ADOLESCENT.

Mrs. MacDevitt, a Melbourne woman, who returned from a visit to her daughter in Port Moresby a fortnight ago, has an interesting tale to tell of living conditions in the Papuan capital. "It is quite a rare thing to possess a cow in Moresby, and most of the inhabitants live on condensed milk. No such thing as selling it in the street like in Australia. All the meat consumed, with the exception of an occasional wallaby shot by the natives—and very good a wallaby steak can be—or wild pig, goes up by the three-weekly service boat from Sydney. I made a beef galatin while I was there, and left it to set, with instructions to the house boy to put it on the ice as soon as it was cool. My daughter and I went out to dinner that evening, and the cook, with the rather ominous name of Hoodoo, found the galatin and warmed it up for my son-in-law's supper. At least, he put it in the oven till the corners of the serviette that contained it were singed, and then set it before him as a great delicacy. Hoodoo did not see why the Taubada (master) should not have a fine meal as well as the absent Sinebada (mistress).

"To order a poached egg you must tell your boy to 'fry an egg along water.' The boys take the greatest pride in anything to do with the table appointments, and they never have to be told to clean the silver or serve things daintily. But they simply hate sweeping the verandahs. You live on the verandahs, and in the summer there is a mosquito room erected there. After meals, which are finished as hastily as may be to get away from the flies and mosquitos, you retire to the mosquito room, which is made of fine wire netting in frames, capable of being easily removed when not needed. My bed mosquito net was a magnificent erection of scrim, costing five pounds, and hanging like an



MISS EVE GRAY

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Elizabethan canopy in a square from the roof, with several feet of floor space between it and the bed.

"Lalai, the house boy, was a picturesque youth of fifteen, who wore sets of bracelets and a rami of white twill, two yards long and three-quarters of a yard in depth, draped round his loins and tucked into a belt. I have seen him sitting on the ground with the end of a new rami between his toes, while he laboriously sewed the necessary adornment—a strip of red turkey twill—along the ends. At Government House the table boys served in singlets when ladies were guests, but, somehow, there seemed to be something indecent in so much clothing; it is more in keeping with the native to see the gleam of his own brown body. Lalai was faithfulness itself. On one occasion we sent him to the mission for the day and locked up the house, as we were going on an excursion, but when we got back we found he had climbed down a chimney, and had everything ready for us. He wrote and spoke English and sang little songs all day long—plaintive songs with no more than five or six notes in them. Moresby itself is beautiful—the harbour like an inland sea—and yet it didn't suggest the tropics to me.

A BEAUTY SECRET.

Few of us know the virtue of it, but there is nothing so stimulating to the skin as plain, everyday, cold water. Our mothers are to blame for our ignorance, for there is an old fallacy always cropping up from some grandmother's chair that if you want a beautiful skin you should use rain water to wash in and very little of that. A London beauty specialist, herself the daughter of a medical doctor whose name was a household word in his day, made the discovery by a careful scrutiny of her patients' skins that those who used rain water nearly always had very open pores, while the common-tap variety had a stimulating effect, and acted as an astringent. Cold water dashed over the face three or four times during the day will give a refreshment to the worker or the shopper or the sufferer from brain fag that nothing else will quite furnish. "I wash my face at night and never use water in the daytime," is a phrase on many a woman's lips, though for pure ignorance of skin welfare it has no equal.

Hot water should never be used in the daytime, unless it is followed by a douche of cold to close the pores and prevent blackheads or vagrant grains of dust from entering therein. Nor should one choose the actual moment after coming indoors from the hot sun to apply the face bath, but with discrimination it will be found of infinite virtue. Cupping the eyes with palmsful of cold water is also good, having a bracing effect on the small blood vessels of the eyelids and the soft flesh beneath the eyes.

DREAMS.

When we sink into that slumbrous resistless state known as sleep, and become ethereal inmates of the Wonderful Land of Nod, it is the sub-conscious Mind, the store-house of the Brain, which like the owl, comes into ascendancy with the Night.

An "endless phantasmagoria" of visions float in front of us, and pass away into the Never-Never.

Where do they go, these lost dreams? Some are retained, a very few come back; but the countless millions of lost dreams—they vanish silently with the black night, perhaps into that "shadowy bourne whence no traveller returns."

The vague shadowy people in our world of dreams are surprisingly real to us. We are vitally concerned with and interested in their destinies; night after night they continue to be our constant companions, charming or terrifying, according to the dreams allotted to us.

To get down to brass tacks—whence comes the "stuff that dreams are made of," what are they, these ghostly companions of our nights,

Henri Bergson, the learned psychologist, explains it feasibly. He says:

"If you close your eyes you will see a number of slow-moving, coloured spots. Physiologists and psychologists who have studied this phantasmagoria call it 'ocular spectra' and 'phosphenes.'

"It can be explained by slight modifications which occur ceaselessly in the retinal circulation, or by pressure that the closed lids exert on the eyeball, causing a mechanical excitation of the optic nerve.

"This is the principal material of which we shape our dreams."

Then dreams really originate within ourselves, being the creations formed by the

sense perceptions and impressions gathered during the day and stored in the sub-conscious mind.

During the daytime we live *outside* of ourselves—among the people who surround us.

In the night-time, on the contrary, being alone, we live completely *within* ourselves, and the world of perceptions which we have gathered all day reappear.

Bergson goes on to explain that many dreams, in fact, most dreams, are caused by external auditory and visual sensations received by the sleeper during the period of sleep. "Our faculty of sense perception, far from being narrowed during sleep at all points, is on the contrary extended."

A match struck in a dark room or lights switched on will cause the sleeper to dream of fires and burning, etc.

A window rattling or the tinkling of a bell will induce dreams of music, singing or thunder, and so on.

Bergson says any dream can be explained. He explains the following in a very logical manner:

A man dreamt that he had to balance two heaps of gold equally. He tried and tried, yet he could not get them level. His failure caused him great anguish, beads of perspiration broke out upon his brow, yet he could not succeed.

Instead of making a mountain out of a mole-hill by interpreting all sorts of dramatic coming events, Bergson logically deduced the following.

By twisting and turning around, the man's toe had got caught in the sheet, thereby dragging it under that foot, and lifting it a little higher than the other foot. That is to say, the feet were not parallel with each other on account of the elevation of one. . . . That is why he could not level the heaps.

Thus in a perfectly logical and sound manner most intensely tragic dreams can be explained, though our imagination loves to linger with the idea of the supernatural in that wonderful realm of Fancy.

THE HAND-SHAKE AS AN INDEX TO CHARACTER.

THE HAND-SHAKE AS AN INDEX TO CHARACTER.

Among civilized people the hand-shake is the most natural expression of friendship. Although it may be one of the simplest acts of expression, yet much may be read as to the character of the person

performing the act by an attentive observer.

Often the nationality of the individual will give his action a characteristic manner, as, for instance, the Italians clasp hands with a passionate effusion absolutely unknown among the people of the north.

A very dignified person will decline to shake hands at all, and a dissipated person lets go quickly.

Beware of the person who will not give you his whole hand, but puts forth only two fingers—he has something to conceal. It is a peculiar but characteristic trait of the business man, editors with few exceptions, and lawyers in particular, that they do not give a warm, hearty hand-shake.

Balzac has said: "We acquire the practise of silencing our lips, our eyes, our eyebrows, our forehead, but the hand does not dissemble and no feature is more expressive." The hand has a thousand ways of being dry, moist, burning, icy, soft, hard, unctuous; it palpitates, it perspires, it hardens, it softens, it presents an inex-

plicable phenomenon which one may term "the incarnation of thought."

Nothing is more unpleasant than a flabby hand-shake, and the feel of a clammy or harsh, dry hand, instead of the warm, friendly grasp, strikes a chill to the blood. "Uriah Heep," one of Dickens's famous villains, had such a hand-clasp. Put not your trust in such.

In shaking hands honesty is expressed by the open hand with palm turned outwards.

This person is open and frank, and has nothing to conceal. The kind-hearted person shakes hand warmly; the cold, precise person gives a cold manual greeting.

There are some persons who are by nature cool and undemonstrative, and who, for manifest reasons, fail to respond to a hand-shake.

They place between your warm, expectant fingers a corpse-like, clammy member which arouses combative emotions of dislike and horror.

Instinct will warn one not to place too much trust in such an individual.

NORTH HARBOUR, MANLY.



Photo: M.D.

This photograph shows a view from North Harbour, Manly, looking towards the Heads. North Harbour is becoming one of the most favoured residential portions of the charming "village."

(*Phantoms of Peace, Continued from Page 499.*)
not augment Hartwell's trouble, or let him stain his hands with blood, however just that act might be. He would reveal himself, but he would so twist the truth of Nell's sad story that the father would lose his agony and hate, his driving passion to wander over this desolate desert.

This made Dwire think of Nell as a living, breathing woman. She was somewhere beyond the dim horizon line. She would be thirty years old—that time of a woman's life when she was most beautiful and wonderful. She would be in the glare and glitter, sought and loved by men, in some great and splendid city. At that very moment she would be standing somewhere, white-gowned, white-faced, with her crown of golden hair, with the same old haunting light in her eyes—lost, and bitterly indifferent of her doom.

Dwire gazed out over the blood-red, darkening desert, and suddenly, strangely, unconsciously, the strife in his soul ceased. The moment that followed was one of incalculable realisation of change, in which his eyes seemed to pierce the vastness of cloud and range and the mystery of gloom and shadow—to see with strong vision the illimitable space of sand and rock. He felt the grandeur of the desert, its simplicity, its truth, and he learned at last the lesson it taught.

No longer strange or unaccountable was his meeting with Hartwell. Each had marched in the steps of destiny, and as the lines of their fates had been inextricably tangled in the years that were gone, so now their steps had crossed and turned them toward one common goal.

For years they had been two men marching alone, answering to an inward and driving search, and the desert had brought them together. For years they had wandered alone, in silence and solitude, where the sun burned white all day and the stars burned white all night, blindly following the whisper of a spirit. But now Dwire knew that he was no longer blind. Truth had been revealed—wisdom had spoken—unselfish love had come—and in this flash of revelation Dwire felt that it had been given him to relieve Hartwell of his burden.

IV.

Dwire returned to camp. As always, at that long hour when the afterglow of sunset lingered in the west, Hartwell was plod-

ding to and fro in the gloom.

"I'm wondering if Hartwell is your right name," said Dwire.

"It's not," replied the other.

"Well, out here men seem to lose old names, old identities. Dwire's not my real name."

Hartwell slowly turned. It seemed that there might have been a suspension, a blank, between his usual quiet, courteous interest and some vivifying, electrifying mood to come.

"Was your real name Warren?" asked Dwire.

Hartwell moved with sudden start.

"Yes," he replied.

"I've got something to tell you," Dwire went on. "A while back I knocked your coat down, and a picture fell out of your pocket. I looked at it. I recognised it. I knew your daughter Nell."

"You!"

The man grasped Dwire and leaned close, his eyes shining out of the gloom.

"Don't drag at me like that! Listen. I was Nell's lover. I am Gail Hamlin!"

Hartwell became as a man struck by lightning, still standing before he fell.

"Yes, I'm Hamlin," repeated Dwire.

With a convulsive spring Hartwell appeared to rise and tower over Dwire. Then he plunged down upon him, and clutched at his throat with terrible, stiffing hands. Dwire fought desperately, not to save his life, but for breath to speak a few words that would pierce Hartwell's maddened mind.

"Warren, kill me, if you want," gasped Dwire; "but wait! It's for your own sake. Give me a little time! If you don't, you'll never know. *Nell didn't go to the bad!*"

Dwire felt the shock that vibrated through Hartwell at those last words. He repeated them again and again.

As if wrenched by some resistless force, Hartwell released Dwire, staggered back, and stood with uplifted, shaking hands. The horrible darkness of his face showed his lust to kill. The awful gleam of hope in his luminous eyes revealed what had checked his fury.

"Comrade," panted Dwire, "it's no stranger that you should kill me than that we should meet out here. But give me a little time. Listen! I want to tell you. I'm Hamlin—I'm the man who broke Nell's heart. Only she never went to the

bad. You thought wrong—you heard wrong. When she left Peoria, and I learned my true feelings, I hunted her. I traced her to St. Louis. She worked there, and on Sundays sang in a church. She was more beautiful than ever. The men lost their heads about her. I pleaded and pleaded with her to forgive me—to marry me—to let me make it all up to her. She forgave, but she would not marry me. I would not give up, and so I stayed on there. I was wild and persistent; but Nell had ceased to care for me. Nor did she care for any of the men who courted her. Her trouble had made her a good and noble woman. She was like a nun. She came to be loved by women and children—by every-one who knew her.

"Then some woman who had known Nell in Peoria came to St. Louis. She had a poison tongue. She talked. No one believed her; but when the gossip got to Nell's ears, she faded—she gave up. It drove her from St. Louis. I traced her—found her again. Again I was too late. The disgrace and shock, coming so near a critical time for her, broke her down, and—she died. You see, you were mistaken. As for me—well, I drifted West, and now for a long time I've been taking to the desert. It's the only place where I can live with my remorse. It's the only place where I can forget she is dead!"

"Dead! Dead all these years!" murmured Hartwell, brokenly. "All these years that I've thought of her as——"

"You've thought wrong," interrupted Dwire. "Nell was good, as good as she was lovable and beautiful. I was the one who was evil, who failed, who turned my back on the noblest chance life offers to a man. I was young, selfish, savage. What did I know? But when I got away from the world and grew old in thought and pain I learned much. Nell was a good woman."

"Oh, thank God! Thank God!" cried Hartwell, and he fell on his knees.

Dwire stole away into the darkness, with that broken cry quivering in his heart.

How long he absented himself from camp, or what he did, he had no idea. When he returned, Hartwell was sitting before the fire, and once more he appeared composed. He spoke, and his voice had a deeper note, but otherwise he seemed as usual. The younger man understood, then, how Hartwell's wrath had softened.

Dwire experienced a singular exaltation in the effect of his falsehood. He had lightened his comrade's burden. Wonderfully it came to him that he had also lightened his own. From that moment he never again suffered a pang in his thought of Nell. Subtly and unconsciously his falsehood became truth to him, and he remembered her as he had described her to her father.

He saw that he had uplifted Hartwell, and the knowledge gave him happiness. He had rolled away a comrade's heavy, sombre grief; and, walking with him in the serene, luminous light of the stars, again he began to feel the haunting presence of his phantoms of peace.

In the moan of the cool wind, in the silken seep of sifting sand, in the distant rumble of a slipping ledge, in the faint rush of a shooting star, he heard these phantoms of peace coming, with whispers of the long pain of men at the last made endurable. Even in the white noonday, under the burning sun, these phantoms came to be real to him. And in the dead silence, the insupportable silence of the midnight hours, he heard them breathing nearer on the desert wind—whispers of God's peace in the solitude.

V.

Dwire and Hartwell meandered on down into the desert. There came a morning when the sun shone angry and red through a dull, smoky haze.

"We're in for sand-storms," said Dwire. "We'd better turn back. I don't know where we are, but I think we're in Death Valley. We'd better get back to the last water."

But they had scarcely covered a mile on their back trail when a desert-wide, moaning, yellow wall of flying sand swooped down upon them. Seeking shelter in the lee of a rock, they waited, hoping that the storm was only a squall, such as frequently whipped across the open places.

The moan increased to a roar, the dull red slowly dimmed, to disappear in the yellow pall, and the air grew thick and dark. Dwire slipped the packs from the burros. He feared the sand-storms had arrived some weeks ahead of their usual season.

The men covered their heads and patiently waited. The long hours dragged, and the storm increased in fury. Dwire-

and Hartwell wet scarfs with water from the canteens, bound them round their faces, and then covered their heads.

The steady, hollow bellow of flying sand went on. It flew so thickly that enough sifted down under the shelving rock to weight the blankets and almost bury the men. They were frequently compelled to shake off the sand to keep from being borne to the ground. And it was necessary to keep digging out the packs, for the floor of their shelter rose higher and higher.

They tried to eat, and seemed to be grinding only sand between their teeth. They lost the count of time. They dared not sleep, for that would have meant being buried alive. They could only crouch close to the leaning rock, shake off the sand, blindly dig out their packs, and every moment gasp and cough and choke to fight suffocation.

The storm finally blew itself out. It left the prospectors heavy and stupid for want of sleep. Their burros had wandered away, or had been buried in the sand.

Far as eye could reach the desert had marvellously changed; it was now a rippling sea of sand-dunes. Away to the north rose the peak that was their only guiding mark. They headed toward it, carrying a shovel and part of their packs.

At noon the peak vanished in the shimmering glare of the desert. Dwire and Hartwell pushed on, guided by the sun. In every wash they tried for water. With the forked branch in his magnetic hands, Hartwell always succeeded in locating water, and always they dug and dug; but the water lay too deep.

Toward sunset, in a pocket under a cañon wall, they dug in the sand and found water; but as fast as they shovelled the sand out, the sides of the hole caved in, and darkness compelled them to give up. Spent and sore, they fell, and slept where they lay through that night and part of the next day. Then they succeeded in getting water, quenched their thirst, filled the canteens, and cooked a meal.

Here, abandoning all their outfit except the shavel, the basket with a scant store of food, and the canteens, they set out, both silent and grim in the understanding of what lay before them. They travelled by the sun, and, after dark, by the north star. At dawn they crawled into a shady wash and slept till afternoon. Hours were wasted

in vain search for water. Hartwell located it, but it lay too deep.

That night, deceived by a hazy sky, they toiled on, to find at dawn that they had turned back into Death Valley. Again the lonely desert peak beckoned to them, and again they wearily faced toward it, only to lose it in the glare of the noonday heat.

The burning day found them in an interminably wide plain, where there was no shelter from the fierce sun. They were exceedingly careful with their water, though there was absolute necessity of drinking a little every hour.

Late in the afternoon they came to a cañon which they believed to be the lower end of the one in which they had last found water. For hours they travelled towards its head. After night had set in they found what they sought. Yielding to exhaustion, they slept, and next day were loath to leave the water-hole. Cool night spurred them on with canteens full and renewed strength.

The day opened for them in a red inferno of ragged, wind-worn stone. Like a flame the sun glanced up from the rock, to scorch and peel their faces. Hartwell went blind with the glare, and Dwire had to lead him.

Once they rested in the shade of a ledge. Dwire, from long habit, picked up a piece of rock and dreamily examined it. Its weight lent him sudden interest. It had a peculiar black colour. He scraped through the black rust to find that he held a piece of gold.

Around him lay scattered heaps of black pebbles, bits of black, weathered rock, and pieces of broken ledge. All contained gold.

"Hartwell! See it! Feel it! Gold! Gold everywhere!"

But Hartwell had never cared, and now he was too blind to see.

Dwire was true to such instinct for hunting gold as he possessed. He built up stone monuments to mark his strike. Then he filled his pockets with the black pebbles.

As he was about to turn away, he came suddenly upon a rusty pick. Some prospector had been there before them. Dwire took hold of the pick handle, to feel it crumble in his hand. He searched for further evidence of a prior discoverer of the ledge of gold, but was unsuccessful.

Then Dwire and Hartwell dragged themselves on, resting often, wearing out, and at night they dropped. In the morn-

ing, as they pressed on, Dwire caught sight of the bleached bones of a man, half hidden in hard-packed sand. He did not speak of his gruesome find to Hartwell; but after a little he went back and erected a monument of stones near the skeleton. It was not the first pile of white bones that he had found in Death Valley. Then he went forward to catch up with his comrade.

That day Hartwell's sight cleared, but he began to fail, to show his age. Dwire saw it, and gave both aid and encouragement.

The blue peak once more appeared to haunt them. It loomed high and apparently close. The ascent toward it was heart-breaking, not in steepness, but in its league after league of long, monotonous rise.

Dwire knew now that there was but one hope—to make the water hold out, and never stop to rest; but Hartwell was growing weaker, and had to rest often.

The burning white day passed, and likewise the white night, with its stars shining so pitilessly cold and bright. Dwire measured the water in his canteen by the feel of its weight. Evaporation by heat consumed as much as he drank.

He found opportunity in one of the rests, when he had wetted his parched mouth and throat, to pour a little water from his canteen into Hartwell's.

VI.

When dawn came the bare peak glistened in the rosy sunlight. Its bare ribs stood out and its dark lines of cañons. It seemed so close; but in that wonderfully clear atmosphere, before the dust and sand began to blow, Dwire could not be deceived as to distance—and the peak was a hundred miles away!

Muttering low, Dwire shook his head, and again found opportunity to pour a little water from his canteen into Hartwell's.

The zone of bare, sand-polished rock appeared never to have an end. The rising heat waved up like black steam. It burned through the men's boots, driving them to seek relief in every bit of shade, and here a drowsiness made Hartwell sleep standing. Dwire ever kept watch over his comrade.

Their marches from place to place became shorter. A belt of cactus blocked

their passage. Its hooks and spikes, like poisoned iron fangs, tore grimly at them.

At infrequent intervals, when chance afforded, Dwire continued to pour a little water from his canteen into Hartwell's.

At first Dwire had curbed his restless activity to accommodate the pace of his elder comrade; but now he felt that he was losing something of his instinctive and passionate zeal to get out of the desert. The thought of water came to occupy his mind. Mirages appeared on all sides. He saw beautiful clear springs and heard the murmur and tinkle of running water.

He looked for water in every hole and crack and cañon; but all were glaring red and white hot and dry—as dry as if there had been no moisture on that desert since the origin of the world. The white sun, like the surface of a pot of boiling iron, poured down its terrific heat. The men tottered into corners of shade, and rose to move blindly on.

It had become habitual with Dwire to judge his quantity of water by its weight, and by the faint splash it made as his canteen rocked on his shoulder. He began to imagine that his last little store of liquid did not appreciably diminish. He knew he was not quite right in his mind regarding water: nevertheless he felt this to be more of fact than fancy, and he began to ponder.

When next they rested, he pretended to be in a kind of stupor, but he covertly watched Hartwell. The man appeared far gone, yet he had cunning. He cautiously took up Dwire's canteen, and poured water into it from his own.

Dwire reflected that he had been unwise not to expect this very thing from Hartwell. Then, as his comrade dropped into weary rest, the younger man lifted both canteens. If there were any water in Hartwell's, it was only very little. Both men had been enduring the terrible desert thirst, concealing it, each giving his water to the other, and the sacrifice had been all for naught. Instead of ministering to either man's parched throat, the water had evaporated.

When Dwire made sure of this, he took one more drink—the last. Then, pouring the little water left into Hartwell's canteen, he threw his own away.

Hartwell discovered the loss.

"Where's your canteen?" he asked.

"The heat was getting my water, so I

drank what was left and threw the can away."

"My son!" said Hartwell gently.

Then he silently compelled Dwire to drink half his water, and drank the other half himself.

They did not speak again. In another hour speaking was impossible. Their lips dried out; their tongues swelled to coarse ropes. Hartwell sagged lower and lower, despite Dwire's support.

All that night Dwire laboured on under a double burden. In the white glare of the succeeding day Hartwell staggered into a strip of shade, where he fell, wearily lengthened out, and seemed to compose himself to rest.

It was still in Dwire to fight sleep—that last sleep. He had the strength and the will in him to go on a little farther; but now that the moment had come, he found that he could not leave his comrade.

While sitting there, Dwire's racking pain appeared to pass out in restful ease. He watched the white sun burn to gold, and then to red, and sink behind bold mountains in the west.

Twilight came suddenly. It lingered, slowly turning to gloom. The vast vault of blue-black lightened to the blinking of stars; and then fell the serene, silent, luminous desert night.

Dwire kept his vigil. As the long hours wore on, he felt stealing over him the comforting sense that he need not forever fight sleep.

A wan glow flared behind the dark, uneven horizon, and a melancholy, misshapen moon rose to make the white night one of shadows. Absolute silence claimed the desert. It was mute. But something breathed to Dwire, telling him when he was alone. He covered the dark, still face of his comrade from the light of the stars.

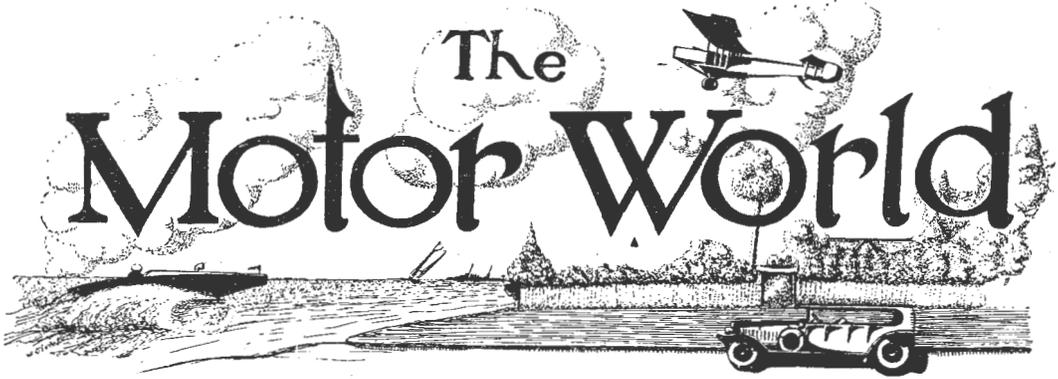
That action was the severing of his hold on realities. They fell away from him in final separation. Vaguely, sweetly, dreamily, he seemed to behold his soul.

Then up out of the vast void of the desert, from the silence and illimitableness, trooped his phantoms of peace. Majestically they formed about him, marshalling and mustering in ceremonious state, and moved to lay upon him their passionless serenity.

SONG OF THE FATES.

By Grantland Rice.

We are the Master Weavers of the universe below.	And some, decreed by our law, we stop to brand at birth.
The destiny of king and pawn is guided at our will.	And some we leave to grizzled age before we intervene.
We carve the nations' highway, and as we drive they go	And those who try to flee our wrath we track across the earth,
To failure or to fortune, to lasting weal or woe.	To rob them of their honour and to wrest away their worth.
And onward now, or backward, the clan must follow still,	And nothing but the pall of death shall ever come between
Though we may trail the valley or mount the highest hill.	To bring them peace and rest again be- neath a mound of green.
The clan bows down before us and we rule with iron hand.	We are the Master Weavers—until the day we meet
But some we lead to laureled heights be- fore we drive to shame,	The man who looks us in the face with staunch, unbroken soul;
And we have marked the gallant chief of many a gallant band	The man who walks with lifted head along the toiling beat
And driven him to infamy, disgraced from his command.	And mocks us with his laughter as he hurls us to defeat;
And some unknown to honour we have lifted up to fame	The man who reads unflinchingly the wording of the scroll
And set them up before the world in all the pride of name.	And fights his way through failure to the summit of the goal.



By "SPARKING PLUG"

Do Motor 'Buses Injure Roadways?

MUNICIPAL wiseacres have been racing each other lately to pillory owners of motor 'buses for allegedly tearing up or otherwise causing injury to suburban roadways.

Sydney's suburbs boasted of bad roadways long before motor 'buses ever dreamt of catering for the Big Smoke's travelling public. This is a well-known fact; yet the charge is coolly laid at the door of the motoring fraternity, who probably will shortly find themselves the target for another special tax to repair the injury they haven't brought about.

By what process of reasoning or engineering test do suburban aldermen conclude that motor vehicles are responsible for the damage attributed to them? That they do their share in the general wear and tear of roadways is not denied, but that they are responsible for nearly 100 per cent. of the damage, as some individuals would have the public believe, is utterly ridiculous and not substantiated in any shape or form by facts or tests.

In the United States recently the same hue and cry was levelled at the owners of motor trucks. A test was made, and the following report published, which should be taken to heart by Sydney's suburban aldermen:—

The Pittsburg (United States) highway test has proved most conclusively that the wear and tear inflicted upon the highways by motor trucks has been greatly exaggerated, for at Pittsburg a section of the ordinary California highway commission standard has stood up under a traffic equivalent to about ten years of traffic on our

ordinary highways. This is the opinion of the secretary of the California Motor Transport Association, who had just completed a survey of the findings of the Pittsburg, Contra Costa County, test highway experiments.

"Had this tremendous volume of traffic of 3,669,100 tons been operated over the normal period of ten years it is perfectly conceivable that the repairs upon the highways made from time to time as required would have maintained the highways in a reasonably good condition even if that traffic volume had passed over it, for at Pittsburg no repairs were made.

"This highway was subjected to very extraordinary tests. For instance, total loads as great as 66,000 pounds were operated and four-ton trucks with a load of twelve to fifteen tons were operated at higher speeds than would be possible on a public highway, all of which contributed to a very marked degree to the development of that section, but in spite of these extraordinary tests it stood up on what is equivalent to about ten years of ordinary traffic, and that without repairs.

Australian's Petrol Measure Invention.

Australia has every reason to congratulate Mr. Frank Hammond on the worldwide popularity being enjoyed by his visible petrol measure.

It has the distinction of being authorized by the New South Wales and Queensland Governments, and having been stamped by the British Board of Trade.

The inventor, Mr. Frank Hammond, an engineer, set out to do what had been thought impracticable, to show clients ex-

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actly the amount of petrol they bought from a garage, to make the flow correspond with the measure, and to prevent any suggestion of tampering with the mechanism of the measure.

All this he has succeeded in doing. "And," says Mr. Vaughan, of Latimer's Visible Petrol, Ltd., who controls the invention, the number of measures which have been replaced by the Hammond system is proof that garage owners want to give both their clients and themselves a fair deal.

"The old system of petrol measuring," he continued, "was based on the vacuum created in a plunger which forced the spirit from an underground storage tank. It was taken for granted that the displacement was correct; it could not be measured, so both buyer and seller had to rest content with the assumption. This is what is known as a blind pump.

"Under the New South Wales Weights and Measures Act this is illegal, for the Act clearly defines that every measure used must have the Government inspector's stamp upon it as a guarantee of its correctness.

Motorists and Fiscal Issue.

When the motoring fraternity dons its goggles and dustcoat it allows no thought of political perplexity to interrupt the tenor of its even way to whatever beauty spot has been selected for a visit.

Motorists, as such, know no politics, or, rather, party politics, unless it be a Good Roads Party or some such movement likely to confer some benefit on the members of the clan.

But the recently established Tariff Board threatens to disturb the political equanimity of all motorists by the introduction of the fiscal wedge, with which it also hopes to penetrate the peace and calm of many other circles besides motoring.

In other words, the Tariff Board in its wisdom increased the duties on spare parts for automobiles, and the Federal Council of Australian Motor Traders is at present engaged in the task of demonstrating to the Board that the duties are unwarranted, and will result in a heavy tax being imposed on the users of motor vehicles.

Mr. H. W. Harrison, the Secretary of the Federal Council of Motor Traders, de-

clares that on a preliminary estimate the new duties would impose the burden of an increased recurring and annual cost of £200,000. This would mean that, taking 10 years as the average life of the cars now running in the Commonwealth, those owning cars to-day would pay into the Customs Department about £2,000,000.

It appears that the Minister for Customs recently transferred a large number of spare parts to a new division of the tariff, which automatically increased the duty considerably. The duty on British spare parts was changed from 10 per cent. to 40 per cent., and the general tariff, America and on the Continent, from 12½ per cent. to 55 per cent. It is now proposed to bring the following spares also under a higher rate of duty: Transmission gears, differential gears, chains, sprocket wheels, crown wheels, and pinion, worm and worm wheels, ball joints, ball cup and cones, universal joints, steering gear segments and worms, bolts and nuts, differential housing, wheel hubs, sleeves for Hyatt roller bearing, gears of all descriptions up to and inclusive of 6ft. diameter, including transmission gears complete in cases other than those used for motor cars.

The following engine parts will also be affected by the revision of classification: Timing gears, starter gears, gudgeon pins, bushings of bronze steel or white metal for engine parts, valves, pistons and piston rings.

It will be seen at a glance that the ultimate decision of the Tariff Board will vitally concern every owner and user of a motor vehicle. Opinions, no doubt, will vary on the subject, as numbers will gladly embrace any and every opportunity to obtain spare parts as cheaply as practicable, whilst others again won't mind paying a little extra in order to give local manufacturers of spare parts the protection necessary to enable them to successfully compete against foreign manufacturers. Maybe the latter may not be over-numerous, but still their attitude is based on something more than a purely sentimental argument, as motor cars would quickly commence to disappear in Australia if every industry were allowed to perish for the sake of an extra duty with

which to keep foreign manufacturers at bay.

Whatever is the decision of the Tariff Board, it is destined to receive caustic criticism or much praise, according to whether it conflicts or harmonises with the fiscal predispositions of motorists generally.

Speeding Up Car Washing.

An excellent time-saver in washing cars is suggested by the fine-jet spray, which no doubt will be eagerly welcomed by busy car owners whose incomes make little or no provision for the engagement of a permanent chauffeur or mechanic.

The jet consists of four spray nozzles on the floor of the wash rack, with their jets pointing towards the under surface of the mudguards; and a fixed nozzle fixed above the middle of the engine hood. This also is a spray nozzle, and spreads water over the forward section of the car. A single valve operates all the nozzles jointly.

In operation the car is driven on to the wash rack, and the water is turned on. The

result of the spray bath is that the caked mud on the guards and wheels is loosened, and the major part of it washed away without further attention.

Victorian 1,000 Miles.

Rules and conditions of the 1,000 miles alpine motor car contest, to be held in Victoria in November, have been issued by the Royal Automobile Club of Victoria.

The contestants will be divided into two divisions, "owner-driver" and the "open class," whilst cars will be classified according to cubic capacity of cylinders into three sections, *viz.*, "A" class, up to 2,200 c.c., inclusive; "B" class, over 2,200 and up to 3,300 c.c., inclusive; "C" class, over 3,300 c.c. In the owner-driver" division the owner must drive the car himself in all speed events, and may be relieved at the wheel not more than three hours on each day's section.

Each contestant will be credited with 1,200 points, representing 900 for depend-

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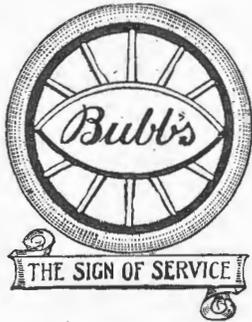
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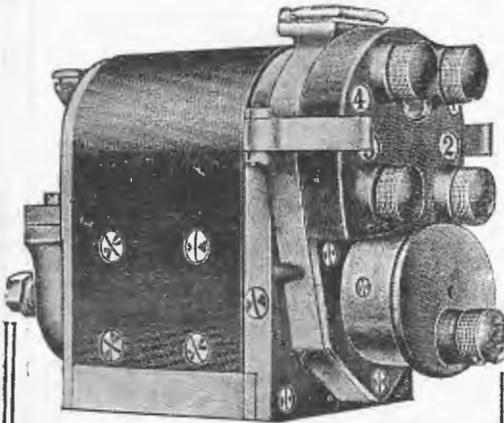
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ability, 50 each for three hill-climbs, 100 for fuel consumption test over the first two day's run to Mallacotta, a distance of about 350 miles, 25 points for an acceleration test over a distance of about 300 yards. At the conclusion of the competition the three contestants scoring the highest aggregate points will be the prize winners. In addition there will be special trophies awarded to the contestants scoring best in the various sections of the event.

Observers will be carried on each car throughout the seven days' driving. The contest will be spread over ten days in all—November 16 to November 25, inclusive. Two days will be spent at Mallacotta Inlet and one at Mount Buffalo.

At the conclusion of the thousand miles of running—mostly over mountainous country—the competing cars will be subjected to a careful examination by a committee of experts, and points deducted for broken or stressed parts.

The conditions are most comprehensive, and should result in a particularly keen contest. As before mentioned, over 80 cars have been nominated for the event, out of which it is anticipated that fully 60 will start.

PERSONALITIES.

Mr. C. B. Bradley, governing director of C.B. Bradley, Limited, who made an inspection of the *Rover* factory during his recent tour of England, France and Belgium, used a *Rover* during the contest to Brisbane.

Mr. Percy Armstrong, of West Australia, is keen on clipping something off the existing West to East record, at present held by Mr. E. Burrows, and which stands at seven days two hours thirty minutes. The approximate distance is 2,600 miles. In 1915 Messrs. Armstrong and Fraser drove from Fremantle to Sydney, via Adelaide and Melbourne, in eight days 23 hours 35 minutes.

Mr. Hower Kerr, manager of Automobiles, Limited, is happily "at home" to all motoring enthusiasts who desire to inspect his new *Durant* show rooms.

Mr. H. T. Nock, of Nock & Kirby, has been at the wheel for the past 15 years, during which period he has guided in turn a *Star* and *Chalmers* through Sydney's

narrow thoroughfares. The latter car is still doing duty.

Talk of Queensland and Victorian reliability contests has prompted local motorists to suggest something in the nature of a 1,000-miles contest for New South Wales. Mr. Nock is an ardent advocate, and is ably backed up by Mr. W. M. Walker, who thinks the idea would create wider interest than interstate contests.

Mr. R. A. Wesley has been appointed captain of the South Australian Branch of the R.A.C.A. Mr. A. Moyle has been elected chairman as well as president of that body.

Dirt in the Petrol.

The builder of a certain fine car has found that dirt in the fuel is more likely to cause a stalled engine than any other one thing. In making this statement he is referring to the higher priced machines, where the greatest attention is given to the perfection of every detail. In the cheaper cars there is no question but that the ignition system is first as a trouble causer and

that the fuel system is second. This is due to the fact that in less highly developed automobiles wiring details are not worked out with such infinite care, insulation is not always the best, and the ignition machinery has defects of one sort and another. The petrol system, therefore, should be given just a little more attention than it usually receives. Most fuel contains sediment. The amount of dirt per gallon is small but the total is extremely large. Every car should have some sort of a fuel strainer or sediment trap. But that in itself is not enough. The trap must be drained frequently.

A Tyre Tip.

Probably few motorists realize that a tyre needs "exercise." A spare tyre should be put into service for a day every month, advises *The Motor*. If carried month after month without being "exercised" occasionally a spare tyre does not retain its wearing qualities so well as one that gets a day's use at intervals.



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A Phenomenon Indeed.

Allen Nichols, who was blinded and lost both arms in the war, was summoned at Harrogate, England, recently for driving a motor car from Leeds to Harrogate without a licence. Mr. Arthur Willey, solicitor for the defence, said that Nichols was a phenomenon. He had spent three years at St. Dunstan's, and was now gifted with extraordinary instincts. He could walk anywhere about Leeds or Harrogate, conduct his business as a fruiterer, and drive his car to an inch. No one unacquainted with him could realize his physical defects. The case was dismissed on the defendant promising not to drive a car again.

A NEW IGNITION TESTER.

The Spark-C is an ignition tester manufactured by the Westinghouse Company, and submitted by the Auto Import Company, of Castlereagh Street, Sydney, by means of which flashes appearing at the window of the tube indicate the condition of the ignition system.

By observing the nature of the flashes at various parts of the ignition system one can readily locate the trouble. It is usually best to begin by holding the nose of the Spark-C to the terminal of the spark plug and work from there back to the coil or magneto.

Spark-C is of special value to ignition and battery service stations, garages, car sales rooms, automobile factories, car owners, etc., and should prove equally effective in the hands of those operating aeroplanes, automobile trucks, country home lighting installations, tractors, motor boats, yachts, and auxiliary power apparatus using exploding type engines.

There are many other uses for Spark-C, such as the testing of the high tension circuits of wireless plants, X-ray installations, etc. Amateur wireless operators can appreciate its value to them, and its popular price brings a scientific and dependable instrument within the reach of even the most modest experimenter.

The Inventor of the Tyre.

The centenary of the birth of R. W. Thomson, the inventor of the pneumatic

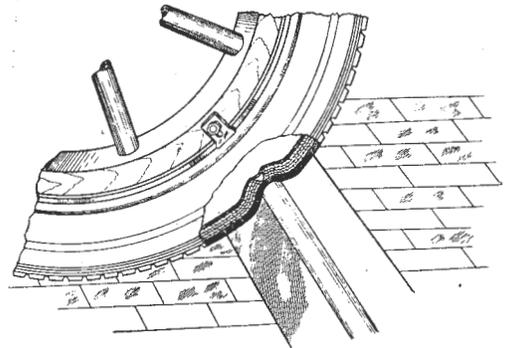
tyre, afterwards perfected by J. B. Dunlop, occurred on June 29. It was proposed to place a tablet on the house in Stonehaven where he was born. The Royal Scottish Automobile Club took an active part in the memorial, and held a commemoration festival.

WHY TYRES "BLOW OUT."

A "stone bruise" is the term used to describe an injury to a tyre caused by striking some object with sufficient force to cause the tyre fabric to be broken (says G. F. Fisher, of the U.S. Tyre Co.). It need not be a stone that causes the damage.

The break in the fabric may be in only one ply or it may be in all of them; but in any case it is always the inside ply that breaks first.

An inexperienced driver whose tyre gets a heavy blow from a stone or a curb usually looks over the outside of the tyre to see if any damage has been done. But the old driver knows that if harm has been done the place to look for it is in the inside, and that any break in the fabric will be registered on the inside ply first.



Normally, the inside ply is shorter than the rest, and each ply is shorter than any of the others which are located outside of it. This is because it is on the inside of the curvature of the tyre. Now if the tyre is suddenly compressed at some point to a considerable extent, such as shown in the illustration, the relative position of the plies is reversed; that is, the outside ply becomes at this particular point the inside ply as regards curvature.

This has the effect of stretching the in-

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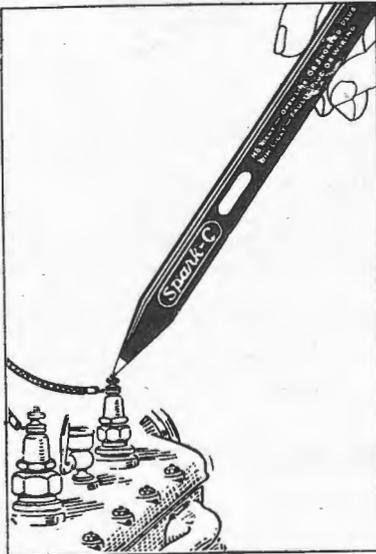
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tells at a glance whether a spark plug is dirty or defective, whether the spark gap is too wide or too close, whether there is a break in the wires, and where. In short it

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side ply more than any of the others, and, of course, if the amount of stretch is very great the fabric will be broken.

If it should happen, as it often does, that only one or two inner plies are broken there will not be any signs of the injury on the outside until a considerable time afterward. This is because the other plies still unbroken will continue to hold against the air pressure even though they will be under excessive strain. But continued flexing will eventually break them also, and the result may be a blow-out, which may occur at any time, even on a perfectly smooth pavement.

Another effect of a break in one or two inner plies may be that from continued bending the broken edges of the fabric rub a hole in the inner tube at that point. Sometimes the break is so pronounced, especially in a fabric tyre, that the air pressure forces the inner tube into the break, and as this is continually closing and opening as the tyre rolls the action is like a pair of pincers, and cuts the tube.

If the tube is chafed through or cut after a bruise such as described the air will pass directly through the carcass and force the rubber side covering, and sometimes the tread, loose from the fabric. When this happens the user generally terms it a blow-out, and as a matter of fact it is; but, contrary to the opinion often held, it is seldom the result of a defect in manufacture. It can generally be traced to an injury sustained some time prior to the final break in the tyre.

THE IMPORTANCE OF SPARKING PLUGS.

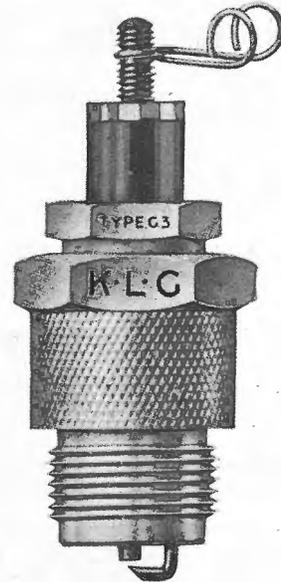
By CHARLES A. BRERETON.

Admitted that the motor vehicle "lives" on its engine, the engine, in turn, functions best with perfect ignition, and perfect ignition is possible only with the right type and right make of sparking plug.

Proof of the adaptability and reliability of a motor vehicle has consistently been looked for in its performance under specified competitive conditions, as provided in the load-carrying, hill-climbing, endurance and other tests, which take place from time to time. In such competitive tests, upon which manufacturers stake so much, the tendency is to use a

certain make of sparking plug, *viz.*, the "K.L.G." They were used in the engines of the aeroplane successfully piloted across the Atlantic by the late Captain Sir John Alcock, and in that in which the late Mr. H. G. Hawker made such a gallant—and almost successful—pioneer effort.

In the flight from England to Australia the late Sir Ross Smith relied upon "K.L.G." plugs for the engines of his



Vickers-Vimy machine. The winning cars in the recent 200 miles light car race at Brooklands, also the first three in the 1,100 c.c. class, were running on "K.L.G."

As a matter of national interest, it may be mentioned that the whole of the output of the Robinhood Engineering Works, Ltd. (the sole manufacturers of the was during the war taken by the Government for plugs to be used in aeroplanes.

DELIVERED PER ACCIDENT.

A native was sent into Nairobi (S.A.) from an outlying farm with a letter to deliver. As he was unable to find the addressee, he wandered round the streets until finally he was knocked down by a vehicle and taken to hospital. By this means he delivered his letter. It was addressed to the doctor who attended him.

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.

YOU CAN remember every detail of business, educational, professional or social life; every subject of study; everything, quite literally, that you want to.

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is a simple, quick, practical correspondence course, and it enables you to make a swift and complete mastery of anything that you need to remember. Students who have to memorise technical works, diagrams, and so on, find that the sheer mental work is cut down by fully three-quarters.

We make what seem to many people impossible claims for our System. Knowing how very difficult it is to memorise absolutely everything when one has an untrained mind, the average man thinks that nothing, or at best very little, can be done to improve matters. But our work has demonstrated in absolutely every case how false this idea is. What we do in short is show you how to

Discover the Memory you did not know you had.

What is more, we have such faith in our ability to do everything we maintain that we adopt a method of doing business that is, as far as we know, unique in the world. We absolutely guarantee your success in making a complete mastery of your memory—and we back this up with a legally-binding signed undertaking, if you do not succeed, to

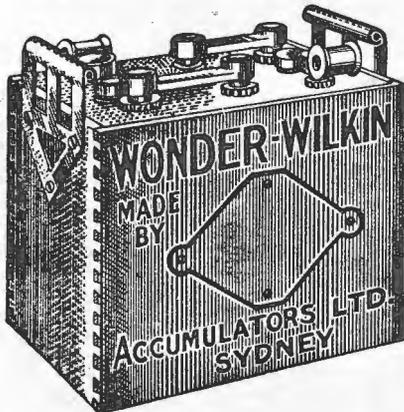
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TWENTY YEARS OF MOTOR CAR DEVOTION

This is the story of a man who for twenty years has been as devoted to a single make of car as Damon was to Pythias. It is the story of a record-breaking fidelity, of ownership so ardent as to be perhaps unparalleled anywhere.

Mr. J. P. Muller, president of a large New York advertising agency, has gone through two decades of car ownership in New York City. Although the illustrations show him in only three cars, it is nevertheless a fact that he is the only individual who can claim the very rare distinction of having owned a car of each year's output of the Olds Motor Works.

When Mr. Muller was asked what he did with his fleet of cars and what use he could have for such an assortment, when it was physically possible for a man to only run one car at a time, he replied that when he bought a new one he passed the older one along to relatives. Finally he found himself, his family and his relatives in possession of so many cars that the simplest way to manage his fleet was to get into the garage business.

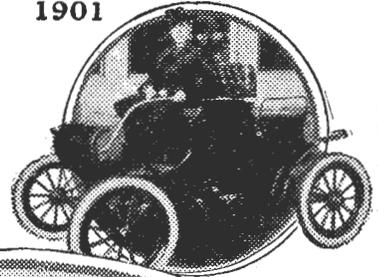
His trio of cars, pictured here, forms an exhibition in the Thoroughfare Garage that has attracted widespread attention, because it shows so graphically the transition through which the automobile has passed, and in which the *Oldsmobile* has always played a leading part.

Mr. Muller pointed out that in relative value the "four" car of to-day costs less than half of what the 1908 models brought.

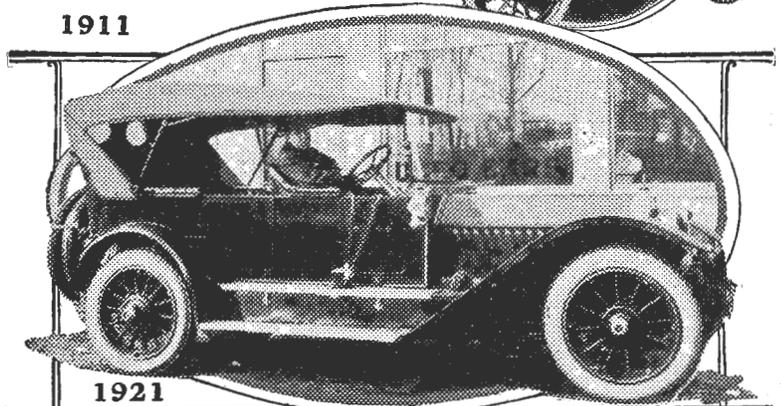
The older model *Oldsmobile*, Mr. Muller said, had no magneto, no electric lighting equipment and no self-starter.

Periodic offers have been made Mr. Muller for the two older cars pictured here, but he has refused to part with them under any circumstances. He regards them as precious possessions, and, inasmuch as he

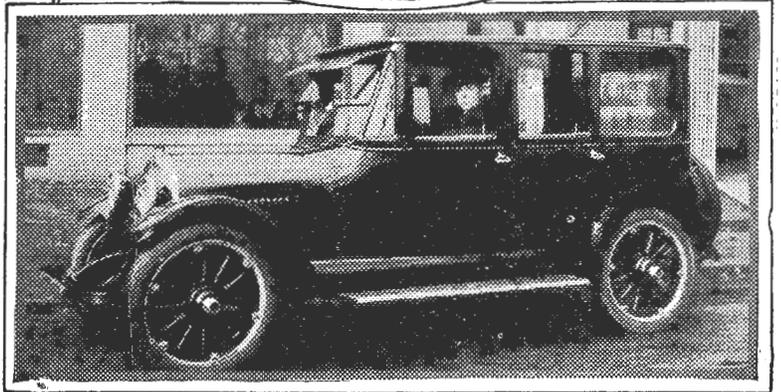
1901



1911



1921



is still in his forties, he hopes to add two or three more decades to the exhibition.

The latest models of the *Oldsmobile* "4" have just arrived at Boyd Edkins, Ltd., the N.S.W. distributors, and depict more than illustrations can the great development in car design since 1901.

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DALTON HOUSE, 115 PITT STREET
SYDNEY, N.S.W.

The Editor,
"Sea, Land & Air."

20/9/22

Dear Sir,

I am pleased to supply you with a few of the outstanding features of La Salle, and the very valuable services which we are most anxious to render all ambitious men and women engaged in business.

The La Salle Extension University was founded in 1909 in Chicago, for the purpose of giving University grade education in business to business men.

The La Salle Extension Institute is affiliated with the La Salle Extension University, and represents this great Business University in Australasia. In the comparatively few months of the existence of this Institute the growth has been extremely rapid, clearly indicating that there was a need for such an advanced educational institution.

The great advantage of La Salle University grade business training lies in their home-study method of teaching. This enables the student to control the time of his training, the programme of his study, and the objective. There are many other advantages, the most important of which are:—

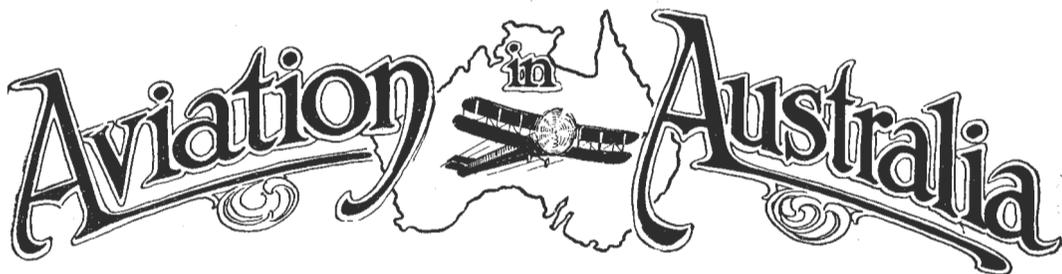
- 1.—The home-study method is economical and decidedly efficient.
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- 3.—The advantage to Society and Democracy because it opens the door to higher education for all.

Our leading commercial men are taking a keen interest in the work of this Institute. One large firm, viz.:—Messrs. Berlei, Ltd., recently enrolled 29 members of their Staff with La Salle. Needless to say, we welcome enquiries from young men of mark and ambition.

Yours very truly,

JAMES WATSON.

P.S.—We teach: (a) Business Administration, (b) Salesmanship, (c) Business Practice and Correspondence, (d) Public Speaking, (e) Industrial Management, (f) Foremanship.—J.W.



Aviation in Australia

Australian Airman's Success.

WING-COMMANDER STANLEY J. GOBLE, D.S.O., D.S.C., O.B.E., and Croix de Guerre, who topped the list of candidates in the marine observers' course after two months instead of seven, is now 31 years of age. He volunteered in Australia for active service in the early part of the war, but he was rejected. He paid his passage to England, and there succeeded in joining up with the Royal Naval Air Force in 1915. He made rapid progress as an airman, and early in his career was engaged at Dover as a tester of aircraft. He saw many months of active service at the front, and was several times mentioned in despatches. He returned to Australia on furlough in December, 1918, and in 1919, at the request of the Commonwealth Government, was appointed by the British authorities as adviser to the Australian Air Force. He was relieved of his position on the Australian advisory board, and in October, 1921, again left for England to take up a 12-months' course. It is expected that he will return to Australia in a few months. His father is Mr. G. Goble, station-master at Richmond, and Wing-Commander Goble himself was a relieving stationmaster before going to the war.

Aerial Bagmen.

Early last month a Sydney syndicate, comprising Lieut. J. S. Butler, Captain Jack Tracey and Lieut. M. Cox, put into operation a long-discussed proposal to carry out a business tour of N.S.W. by aeroplane. A three-seater *Avro (Dyak)* plane was purchased, and business firms readily responded to the opportunity of having their wares exhibited over the wide area mapped out for the initial tour.

Part of the programme consisted of an

exhibition of motion picture films at the various towns visited, and samples of a well-known fire extinguisher and a popular brand of engine oil were also carried. Orders were also secured for a leading make of motor cycle, and at latest reports the venture gave every promise of being a financial success, as well as being a tremendous advertisement for this newest form of commercial travelling. At the conclusion of the present tour the promoters of the venture intend to make a similar trip to the northern rivers of N.S.W.

Queensland Mail Service.

The opening of the Cloncurry-Longreach-Charleville air mail service is expected to take place at the beginning of this month. The route links up the western termini of the three lines of railway that extend inland from the coast. The distance is 650 miles, and the time that will be taken to traverse it will be seven flying hours. The period taken in travelling by rail between Cloncurry and Charleville is about five days. Four machines will be engaged at first, and later two additional machines of the latest design from the Vickers works, propelled by Rolls-Royce engines, will be placed in commission. There are 600 shareholders in the company, and the majority are establishing their own aerodromes, in anticipation of their use by the machines in the course of "aerial taxi" work between the railhead stations and the surrounding homesteads.

Australian Airman in U.S.A.

Aviator V. P. Taylor, the Australian airman, has been granted the use of the old Pine Avenue school site for a balloon ascent on a Saturday afternoon in the near future (chronicles an American exchange).

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You may install Diamond Dry Cells and then forget them! They do not develop those faults which, though small, result in expense, delay and grinding worry to the user.

“DIAMOND CELLS GIVE HONEST SERVICE.”

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H.T. Dry Batteries for Radio Work.



“Coni,” 40 volts, 25/-.

TYPE 4 SPECIAL H.T. BATTERIES.

No.	Name	Ext. Dimensions.	E.M.P.	Price
41	Vacuum	Inches. { 11½ × 10½ × 3 10½ × 7½ × 3 7½ × 6½ × 3 7½ × 4½ × 3	160	80/-
42	Audical		100	51/-
43	Mar		60	32/6
44	Coni		40	25/-
45	Jucon		30	21/-

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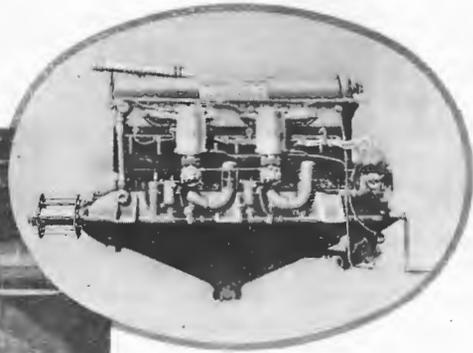
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TELEGRAMS: “EXPANSE,” — ALL BRANCHES.

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6-Cyl. “DYAK” 100 h.p.

Aircraft Engine



This type of engine has been extensively used in Australia on Avro Biplanes manufactured by the Australian Aircraft & Engineering Co., Ltd., of Sydney, and for reliability of running, combined with extreme efficiency in operation, they have proved remarkably satisfactory.

Catalogues, Installation Diagrams, and full particulars on application.

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Cablegrams: “Subsamoco, London.”

Codes used: A.B.C. 5th Edition; Marconi; International; Motor Trade; and Bentley's.

WIRELESS INSTITUTE OF AUSTRALIA

NEW SOUTH WALES DIVISION

THE business of the annual general meeting of the above Division, which was held at the Royal Society's Rooms on September 19, was mainly confined to reading the Secretary's report—covering the period April, 1921, to September, 1922—and the election of the council.

The report, which was a comprehensive one, was received on the motion of Messrs. Mingay and Maclurcan. If space permits it will be published in the November issue of *Sea, Land & Air*. Messrs. Marsden and Colville were appointed scrutineers to examine the ballot papers. The following were elected: Messrs. W. P. Renshaw, C. D. Maclurcan, C. P. Bartholomew, H. A. Stowe, H. R. Gregory, R. D. Charlesworth and M. F. Perry.

After the ballot had been disposed of the meeting resolved into a general discussion of the proposed association of radio clubs.

CLUB DELEGATES MEET.

Six clubs were represented at the second meeting of delegates from radio clubs and

societies of N.S.W., held at the Royal Institute Rooms, Sydney, on September 1. The meeting was presided over by Mr. H. A. Stowe, who asked delegates present to report the decision arrived at by their clubs on the questions debated at the previous meeting. After the reports had been delivered a discussion ensued as to the capitation fee to be charged, and eventually it was resolved that the amount be 2s. per member.

On the question of representation it was decided that any club having 15 members of the age of 17 or over, five of whom hold radio licenses, would be entitled to one delegate to the Central Association on payment of the required fees; and two delegate for 51 members or over.

It was further decided that all capitation fees should be paid half-yearly in advance, and that an advance payment of £1 be made by all clubs at the next meeting. Several other matters of minor importance were decided upon, and the meeting adjourned till the end of the month.

SOUTH AUSTRALIAN DIVISION

The fourth annual general meeting of the South Australian Division, presided over by Mr. Hambly Clark, was held at the Y.M.C.A. Buildings, Gawler Place, Adelaide, on Wednesday, September 6. Following on the reading and confirmation of minutes, correspondence was received from Mr. T. W. Erskine, who desired to open a branch of the Wireless Institute at Broken Hill. It was agreed that this was a step in the right direction, and that he should be assisted as much as possible in forming the branch.

A letter from Mr. H. Kingsley Love, representing the Trans-Pacific Radio Test Committee regarding arrangements for receiving American amateur signals, had to be deferred owing to the amount of business on hand, and will be dealt with by council.

A request from the Editor of *Sea, Land & Air* that full reports of lectures given by members at general meetings be for-

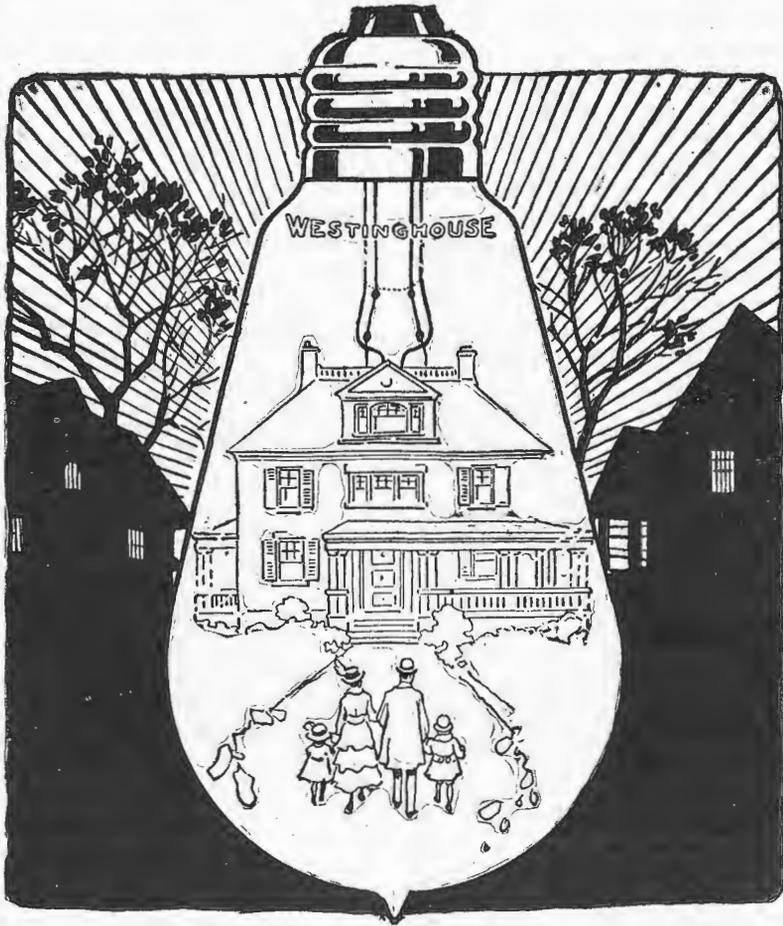
warded for publication was considered, and it was decided that any members who desire to have their lectures published should forward them as early as possible after the meeting.

The following officers were elected for the ensuing year:—

President: Hambly Clark, Esq.; Vice-Presidents: Messrs. J. M. Honner and H. Hawke; Hon. Treasurer: Mr. R. M. Dunstone; Hon. Secretary: Mr. C. E. Ames; Hon. Assistant Secretary: Mr. I. L. Williamson; Council: Messrs. W. J. Bland, H. L. Austin and R. B. Caldwell; Librarian: Mr. R. M. Dunstone; Library Committee: Messrs. C. E. Ames, H. L. Austin and W. H. Harvey; Vigilance Officer: Mr. K. J. Martin; Examining Officers: Messrs. V. R. Cook, W. J. Bland and J. M. Honner.

Members are requested to forward their subscriptions to the Secretary as early as possible.

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TELEGRAMS: "EXPANSE" — ALL BRANCHES.

WIRELESS NOTES

Items of Interest.

DURING the interruption to the Noumea-Bundaberg cable, which occurred on August 8, the telegraph traffic has been expeditiously handled by radio between Brisbane Radio and Noumea Radio Station. Cable communication was restored on September 7.

Captain Hurley, who is undertaking an exploring expedition into the wilds of Papua, has had his launch fitted at Port Moresby with a $\frac{1}{4}$ -k.w. quenched discharger transmitter and P.1 valve receiver. The Defence Department has supplied Captain Hurley with an aircraft wireless set for use with his seaplane.

On his expedition to Central Australia, Professor G. Woolnough carried a military pack set loaned by the Defence Department, and an up-to-date valve receiver supplied by Amalgamated Wireless (Aust.), Ltd. The Adelaide Radio Station will handle all messages to and from Professor Woolnough.

Lectures.

During August Mr. G. J. Weston, Superintendent of the Coastal Radio Service, gave a popular lecture on wireless telegraphy and telephony, illustrated by lantern slides at the Y.M.C.A. Club Rooms, Flinders Street, Melbourne.

A large and appreciative audience followed intently the lecturer's descriptions of the principles of radiotelegraphy and the accompanying slides.

Mr. C. B. Cutler, of the engineering staff, collaborated with Mr. Weston at the lantern.

On September 12 a demonstration of wireless telephony was given before the Fitzroy Branch of the Australian Natives' Association, when a short speech and musical selections were received distinctly by the hundred odd members present.

Rapid Handling of Radio Traffic.

Brisbane Radio is earning a reputation for the rapid handling of traffic. The following are recent instances:—

A radiotelegram lodged on the *Montoro* at 9.45 a.m. was delivered to the agents at

9.49 a.m. Another message lodged on the *Argyllshire* at 4.5 p.m. was delivered to the agents at 4.6 p.m. Two messages received from the *Mindini* at 9 a.m. were in the hands of the agents by 9.3 a.m., and another message from the *Wodonga*, received at 9.28 a.m., was delivered to the agents at 9.29 a.m.

In all the above cases the messages were telephoned to the addresses by the wireless station immediately on receipt from the ships.

COASTAL RADIO SERVICE.

Staff Changes.

W. H. Holloway, Radio Station-master, Broome Radio, has been transferred to Melbourne Radio, on completion of his term of tropical service, and has proceeded on recreation leave.

D. Buchan, Radiotelegraphist, relieving staff, has been transferred to King Island for relief duties.

R. W. Barker, late Island Radio Service, has been appointed Radiotelegraphist, relieving staff, and has taken up duty at Melbourne Radio.

It is with sincere regret that the death is announced of Mr. Austin Fletcher, Radiotelegraphist, Melbourne Radio, at the Austin Hospital, Heidelberg, Vic. Mr. Fletcher died on September 1 after a long and painful illness. As a consequence the service has lost an efficient and popular officer, who was highly esteemed by all who knew him. Our deepest sympathy is extended to Mrs. Fletcher and family in their sad bereavement.

Mr. J. Malcne, Controller of Wireless, and his staff, consisting of Mr. J. Martin, Radio Inspector, and Messrs J. O'Kelly and W. R. Langford, have removed from Radio Office, "Collins House," to new offices at "Chelford House," Flinders Lane, Melbourne.

CALL SIGNALS.

The following list of call signals was allotted during August, 1922:—

V Z D B—Naval Staff Office, Port Melbourne.

V Z D C—Naval Staff Office, Sydney.

V Z D F—Naval Staff Office, Brisbane.

V Z D G—Naval Staff Office, Adelaide.

V Z D J—Naval Staff Office, Perth.

The temporary call sign CGJ has been allotted to the launch, which is being used in connection with Captain Hurley's New Guinea expedition.

JAZZING TO WIRELESS MUSIC

At time of going to press the staff of Amalgamated Wireless were arranging to hold a dance at Miss Bishop's Hall, Elizabeth Street, on Friday, September 29. All were working to make the function a success, and a unique feature was to be a wireless telephony demonstration—the dance music for the extras and a number of vocal items to be broadcasted from the company's wireless station at Glebe. The members of the committee are Messrs. Rose, Atkinson and company.

HOW TO MAKE A SIMPLE AND EFFICIENT VARIABLE CONDENSER.

By W. L. GIBSON.

Most radio amateurs would like to possess a variable condenser, but very few are in a position to pay the high price charged for the factory-made instrument.

The following is the description of a variable condenser constructed by the writer. This condenser, used in conjunction with a home-made, long-wave "Honeycomb" coil set, and one valve, enables American and Japanese long-wave c.w. stations to be clearly heard at my station in Brisbane, Queensland. It may be built very easily and cheaply, and yet is remarkably efficient.

Referring to Fig. I., which is a side view

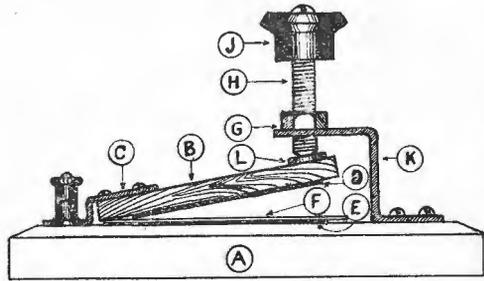
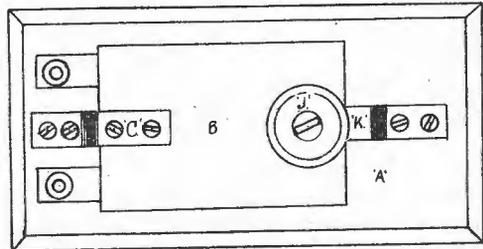
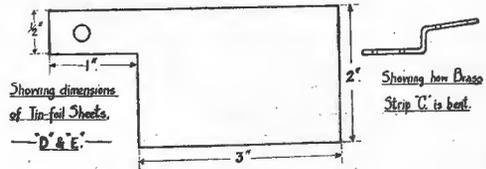


FIG. 1.
—Side View—



—Plan—



of the completed instrument: A is the wooden base-board, which measures about 6in. by 3in. B is a piece of smooth board 3½in. by 2½in. The variable element is formed by glueing a sheet of tinfoil, D, on to the board B. The board B is fastened to the base A by means of the brass strip C. The stationary element is formed by glueing a sheet of tinfoil, E, to the base A. A sheet of mica, paraffine paper or empire cloth, F, 3½in. by 2½in., must be glued over this for the purpose of insulating the variable from the stationary ele-



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605 George Street, Sydney

ment. *G* is a nut soldered to the brass arm *K*, while *H* is a bolt, threaded through the nut *G*. The simplest and cheapest method of making the knob *J* is to saw a cotton-reel in two and mount half of it on the bolt. This may be done by slipping the knob on the bolt and filling up the space around the bolt with molten lead. *L* is a tack or drawing-pin hammered into the board *B* in such a position that the end of the bolt *H* bears upon it.

The capacity of the condenser is increased by screwing down the knob *J* (thus bringing the two plates closer together), and *vice versa*. By this method a much finer adjustment is possible than with a factory-made instrument (unless fitted with a "vernier" adjustment), as it is evident that one revolution of the knob *J* will only move the plate *B* a fraction of an inch. This type of condenser also has a relatively high maximum capacity owing to the fact that the two plates may be brought very close together.

The best place in the circuit for this condenser is in parallel with the tuning inductance. Although tuning is a little finer with the condenser in series with the tuner, static and induction hum will be greatly increased. This condenser will be found a great advantage in the reception of radiophone.

Clearing the Pacific Air.

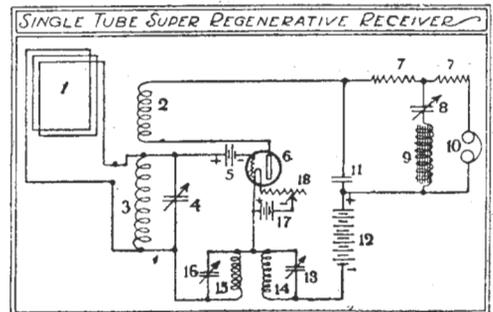
After considerable difficulty in reaching a wave length which does not interfere with the transmitting of the British and Japanese radio stations on the Pacific, the United States Naval Communication Service has determined upon a wave length of 13,700 for east-bound messages from

the naval station at Cavite. A two weeks' test between Cavite and San Francisco showed that with this wave length the signals from the Japanese stations sending from Iwaki did not interfere, as was previously the case. Originally the Cavite station sent Eastern messages on 14,200, but that interfered with the English stations, and 13,900 was tried out with interference from Iwaki. To-day, however, NPO comes through to San Francisco on 13,700. Westbound messages from San Francisco and San Diego are not sent direct to Cavite, but relayed through Pearl Harbour.

The Radio Primer.

The diagram below shows the Armstrong super-regenerative system employing one vacuum tube only. In this circuit the single tube acts as a regenerator, oscillator, detector and amplifier simultaneously. The constants of the circuit are as follows:—

1. Loop aerial, twelve turns on a 3-foot frame, wired spirally. 2. Secondary of the regulation vario-coupler with twice the



usual amount of turns. 3. Primary of vario-coupler. 4. Variable condenser, .001 mfd. capacity. 5. The "C" battery, 4 volts maximum. 6. Vacuum tube. 7. Resistances, 12,000 ohms each. 8. Variable condenser, .001 mfd. 9. Iron core choke, 100 milhenries inductance. 10. Telephones. 11. Fixed condenser, .005 mfd. capacity.

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OVER 600 STUDENTS APPOINTED!

The Marconi Schools have already appointed over 600 STUDENTS as WIRELESS OFFICERS.

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SEND TO-DAY for particulars of our Specialised Home Study Course. With the limitless possibilities of Wireless, intending students should not delay.

WE GUARANTEE TO TEACH YOU UNTIL YOU ARE PROFICIENT.

All Marconi Home Study Students are supplied free with a Gramophone and Wireless Training Records, Reference Books, and Key and Practice Buzzer Set. These instruments, etc., become the property of the student.



WRITE TO DAY TO

MARCONI SCHOOL OF WIRELESS
 97 CLARENCE STREET, SYDNEY;
 422-4 CHANCERY LANE, MELBOURNE.

12. "B" battery, 80 volts. 13. Variable condenser, .0005 mfd. 14. Duo-lateral coil, 15,000 turns. 15. Duo-lateral coil, 1,250 turns. 16. Variable condenser, .005 mfd. capacity. 17. Storage battery; 6 volts for UV 201, or 8 volts for UV 202. 18. Rheostat.

Condensers 13 and 16 do not necessarily have to be the ordinary variable condensers. They can consist of ordinary fixed condensers, arranged to a multiple, so that the total maximum values given can be built up by means of the switch.

Radio University Soon.

A radio university, placing higher education within the reach of all, is now considered but a matter of time. The future educational possibilities of radio seem to be limited only by the co-operation of the people.

Islands of Japan to be Linked Up by Radio.

Telephone communication by radio will be opened across the Chosen Strait shortly, says a report to the Department of Commerce from Vice-Consul Corell, Nagasaki. The stations at Fukuoka and Fusan contain the necessary equipment, and it is expected that the shipping along the coasts of Kiushu and Chosen will take advantage of this service.

This particular installation is a unit in the government plan for linking up the various islands of the empire by wireless telephone and telegraph.

New Honeycomb Coil.

A new pattern of locally made honeycomb coil has recently been put on the market by the makers, Electrical Utilities Supply Co., of 605 George Street, Sydney, a firm who keep well abreast of radio developments. The coil referred to is specially designed for radio concert reception, and is available in all standard sizes, mounted or unmounted.

Improving Faulty Crystal.

Sometimes it is very difficult to get a sensitive spot on your crystal. Try the following plan: Take a discarded crystal and pulverize it, but not very finely. Put some of this inside a metal casing, and screw into the cup of your detector. You will be surprised to note how quickly you can find a good spot then.

Radio Companies in New York.

Figures just announced indicate that in New York State alone during the month of March, 1922, 1717 new radio corporations were organized.

Broadcasting in England.

There is still much uncertainty regarding the conditions under which wireless broadcasting will be carried out in England, according to the electrical division of the Department of Commerce.

Differences have arisen between manufacturers and the Postmaster-General, and conferences are now being held, attended by representatives of between forty and fifty firms, including those which have applied for licenses to broadcast. The vital question is as to the erection of broadcasting stations, one group wishing to have the construction of all of them handled by one organization, and the other, composed of smaller manufacturers, opposing this office, which they characterize as monopolistic.

The scheme as outlined calls for eight stations, which are expected to cost approximately £20,000 each. In connection with the cost of the broadcasting programme, it has been suggested that the government's "Listening In" license fee be increased, and that the additional sum thereby obtained be placed in a common fund, out of which the programme would be provided. At present it is proposed to charge 10s. 6d. (\$2.44 at par) for registration of receiving sets.

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ARE YOU THREATENED WITH
NERVOUS BREAKDOWN?

IF SO, START AT ONCE ON A COURSE OF

*Hean's Tonic
 Nerve Nuts.*

THE
Finest Tonic Ever Made

The Famous Producers of Pure, Rich Blood and Healthy Nerve Tissue

SCIENTIFIC FACTS EVERYONE SHOULD KNOW.

BY FRANCIS G. GASHLER, ANALYTICAL CHEMIST.

Scientific investigation has proved that, in the process of living, the cells of the body, and particularly those of the nervous system, become exhausted in certain definite proportions according to the nature of the work a person does. To replace the worn-out cells and tissues at a rate sufficient to keep the body "fit," it is necessary to assimilate each day the following body constituents:—

	Protein Grammes.	Fat Grammes.	Carbo- hydrates. Grammes.	Giving working energy in Calories.
At Leisure	88	108	345	2501
At Moderate Work	116 to 125	137 to 158	476 to 538	3364 to 3762
At Hard Work	145	195 to 235	557 to 666	4223 to 4954

It must be understood that the eaten food breaks up in the body, giving its molecular energies off to be used up to supply power for the exertion of the body. Of the broken-up particles of food only a relatively small proportion actually enters in the composition of the body itself for building-up purposes, or to replace those cells which become exhausted and are eliminated. Since a process of wastage and replacement of the cells is continually going on in the body, it is highly essential that the replacement should, at least, be equal to the elimination.

While the above body requirement, in the case of a moderately hard-working person, would be supplied by a daily consumption of ½ lb. prime lean meat, 1½ lb. bread, 2 oz. butter, ½ pint milk, 1 lb. potatoes, and ½ lb. oatmeal, it must be understood that persons convalescing from sickness, pale, anemic women, delicate children, etc., require additions to the above diet to maintain re-creation of blood cells, while brain workers and highly-strung persons need something extra to maintain normality to the nerve cells.

As a result of analysis, I find that the additions so needed are admirably furnished in a scientific way in Hean's Tonic Nerve Nuts, which are compounded of iron, carbonate, capicine, extract cascara sagrada, calcium glycerophosphate, etc.

The blood of an ordinary, healthy woman contains 35 grains of iron in the red constituent, which is called hæmoglobin. Anæmia or chlorosis is due to a deficiency of iron in the blood. I find that in each Hean's Tonic Nerve Nut there is approximately 3 grains of iron carbonate, presented in a form which ensures effective assimilation, which the extract of cascara sagrada counteracts constipation, and facilitates in a painless way the speedy removal of food residues. In this regard it is far superior to many of the so-called liver pills, especially to those which contain mercury and harsh cathartics. But the ingredient of most merit in Hean's Tonic Nerve Nuts is calcium glycerophosphate. This is the nucleus of lecithin, which combines in the body with fatty acids and cholesterin. Now lecithin is the most important part of the brain, nerves, muscles, glands and organs; in fact, it is believed to be the principal bearer of life itself, it increases the number of red blood cells, aids in the assimilation of nitrogen from the foods, directly adds phosphorus, and thus, together with the calcium in Nerve Nuts, builds up the bones. In all neuragic conditions, neurasthenia, rickets, all forms of mal-nutrition, debility after septic conditions, and typhoid fever, it has been found to quickly restore the body to normal conditions by adding elements which cannot be derived so readily from ordinary foods. Calcium glycerophosphate also neutralises certain toxic poisons like snake venom. It has been ordered by eminent physicians directly as the elixir of life, notably so by the celebrated Dr. Albert Robin, a Parisian authority, by the late Dr. Brown Sequard, and others.

(Signed) FRANCIS G. GASHLER,

Analytical Chemist.

HEAN'S TONC NERVE NUTS are obtainable from all Leading Chemists and Stores.

A TWO-CIRCUIT CRYSTAL SET

HOW TO CONSTRUCT AND OPERATE

(By Science Service.)

AT a very small cost, depending upon the quality of the telephone receivers and the condenser purchased, you can make an efficient radio receiver right at home that can distinguish between messages from different transmitting stations sent on wave lengths nearly the same. The outfit will enable anyone to hear radio code messages or music and voice sent from medium-power transmitting stations within an area about the size of a large city, and from high-power stations within 50 miles, provided the waves used by the sending stations have wave frequencies between 500 and 1,500 kilocycles per second; that is, wave lengths between 600 and 200 metres. This equipment will not receive undamped (continuous) waves.

This set is superior to a single-circuit outfit, as it is more selective; than is, can be tuned sharper. The instructions tell how to make all parts of a receiving station except the antenna, lightning switch and necessary earth connections.

Parts of Set.

The two-circuit receiving set consists essentially of a coupler, a variable condenser, crystal detector and accessories.

Assembled receiving set is shown in Figure 1, and Figure 2 shows how to wire the set.

The coupler, shown in left half of Figure 1 is composed of a fixed section made up of the coil tube P, the upright J, the contact panel K and the base B, and a movable section composed of coil tube S, the supporting contact panel M and the base L.

Instructions for making the movable coil of the coupler are as follows:

Movable or Secondary Coil.

The coil tube S (Fig. 1) is a piece of cardboard tubing $3\frac{3}{8}$ inches in diameter and 4 inches long. A round cardboard table-salt box, which can be obtained at a grocery store, is about $3\frac{3}{8}$ inches in diameter, and can be used for this purpose. One of the cardboard ends or caps should be securely glued to the box. This tube is wound with No. 24 (or No. 26) double cotton covered copper wire.

To wind the wire punch two holes in the tube $\frac{3}{8}$ inch from the open end, as shown at R (Fig. 2). Weave the end of the wire through these holes so that it is firmly anchored, and has one end extending about 10 inches inside the tube. Punch a hole F about $\frac{3}{8}$ inch from the other end (which has the cardboard cover secured to it) in line with the holes punched at R. Draw the free end of the wire through the inside of the tube and thread it out through the hole at F. Now wind on 10 turns of wire and take off a 6 inch twisted tap made by twisting a 6-inch loop of wire together at such a

place that it will be slightly staggered from the first connection. Hold the turns tight and punch a hole B directly underneath this tap. Insert the end of the tap in the hole and pull it through the inside of the tube, so that the turns are held in place. The hole for this tap should be slightly staggered from the first two holes which were punched. Punch another hole L $\frac{3}{8}$ inch from the other end of the tube and in line with the hole B. Thread the twisted tap out through this hole and pull it tight. Wind on 10 more turns and bring out another twisted tap, then 10 more turns and another tap, 15 turns and other tap, 15 more turns and another tap. Finally, wind on 20 more turns and bring out the free end of the wire in the same manner as the taps were brought out. The tube now has 80 turns of wire wound on it, and there are 5 twisted taps and two single wires projecting through the row of holes at the closed end of the tube. The position of the wires inside the coil tube is shown by the dotted lines.

Base and Support for Coil.

The contact panel M (Fig. 1), which supports the coil tube, is a piece of dry wood $5\frac{1}{2}$ inches high, 4 inches wide and $\frac{1}{2}$ inch thick. The contacts, switch arm and knob, and binding posts will be described in another instalment. The end of the switch arm should be wide enough so that it will not drop between the contact points, but not so wide that it cannot be set to touch only a single contact. Having located the hole for the switch-arm bolt, the switch arm should be placed in position and the knob rotated in such a manner that the end of the contact arm will describe an arc upon which the contact points are to be placed. The holes for the contacts should next be drilled, the spacing depending upon the kind of contacts which are to be used.

The movable base L is a square piece of dry wood 4 inches long, 4 inches wide and about $\frac{3}{8}$ inch thick. Care should be taken to have the edges of this block cut square with respect to the sides.

Now screw panel M to the movable base L, as shown in Fig. 1. Care should be taken to have the edges of the blocks M and L evenly lined up, so that the two edges of the block L (Fig. 1.) which slide along the inside edges of the strips H and I will be smooth, continuous surfaces.

Fixed or Primary Coil.

The cardboard tubing for coil tube P is $4\frac{1}{2}$ inches in diameter by 4 inches long. About two ounces of No. 24 (or No. 26) double cotton-covered copper wire is used for winding the coil. Punch two holes in the tube about one half inch from one end. Weave the wire through these holes in such a way that the end of the wire will be firmly anchored, leaving about twelve inches of the wire free for connecting. Start

with the remainder of the wire to wind turns in a single layer about the tube, tightly and closely together. After one complete turn has been wound on the tube hold it tight and take off a tap. This tap is made by twisting a 6 inch loop of the wire together at such a place that it will be slightly staggered from the first connection. Proceed in this manner until ten twisted taps have been taken off, one at every turn. After these first ten turns have been wound on the tube take off a 6 inch twisted tap for every succeeding ten turns until seven taps are taken off or seventy additional turns have been wound on the tube. After winding the last turn of wire anchor the end by weaving it through two holes punched in the tube as at the start, leaving about twelve inches of wire free for connecting. It is to be understood that each of the eighteen taps is slightly staggered to the right from the one just above so that the taps will not be bunched along one line on the cardboard tube. (See Fig. 2.) It might be advisable after winding the tuning coil to dip the tuner in hot paraffin. Glue a cardboard cover to the end of the tube where the single turn taps are taken off.

The Panel.

Panel K should be made from a board $7\frac{1}{2}$ inches long by $4\frac{1}{4}$ inches wide and about $\frac{1}{8}$ inch thick. The position of the contacts can best be determined by inserting the switch arms in their respective holes and turning the knobs so that the ends of the switch arms will describe arcs. The position of the several holes for the binding posts, switch arms and switch contacts may first be laid out and drilled.

The "antenna" and "ground" binding posts may be ordinary 8-32 brass bolts about $1\frac{1}{2}$ inches long, with three nuts and two washers. The first nut binds the bolt to the panel, the second nut holds one of the short pieces of stiff wire, while the third nut holds the antenna or ground wire as the case may be. The switch arm with knob may be purchased in the assembled form or it may be constructed from a $\frac{3}{8}$ inch slice cut from a broom handle and a bolt of sufficient length equipped with four nuts and two washers, together with a strip of thin brass. The end of the switch arm should be wide enough so that it will not drop between the contact points, but not so wide that it cannot be set to touch only a single contact. The switch contacts may be of the regular type furnished for this purpose, or they may be 6-32 brass bolts with one nut and one washer each.

The fixed base B is a piece of dry wood $5\frac{1}{2}$ inches wide, 11 inches long and between $\frac{3}{4}$ and $\frac{7}{8}$ inch thick. The support J for the fixed coil tube is $5\frac{1}{2}$ inches wide (the width of the base), 6 inches long and about $\frac{1}{2}$ inch thick. This board should be screwed to one end of the base, so that it is held securely in a vertical position. It will then project about five inches above the base G.

A strip of wood I, 11 inches long, 5-16 inch wide and about $\frac{1}{4}$ inch thick, is now fastened to the base by cigar-box nails or small brads, so that it is even with the rear edge, as shown in Figure 1. The upright panel M, having been

fastened to the movable base L, as previously explained, is placed in position as shown. The next step is to locate the strip H in such a position that the block L will slide easily back and forth the entire length of the fixed base B. Having found this position this strip is secured in the same manner as the strip I. It is, of course, understood that neither the movable coil tube S nor the switch contacts and binding posts have, up to the present time, been mounted on the upright panel M. The wooden parts for the loose coupler are now finished and should be covered with paraffin.

It might be advisable after winding the coil tubes P and S to dip them in hot paraffin. This will help to exclude moisture. Have the paraffin heated until it just begins to smoke, so that when the coils are removed they will have a very thin coating of paraffin.

Variable Condenser.

The variable air condenser C should have a maximum capacity of between 0.0004 and 0.0005 microfarads (400 to 500 micro-microfarads). The type pictured in Figure 1 is inclosed in a round metal case, but the "unmounted" type may also be used. The variable condenser is mounted on a board R (Fig. 1) about 10 inches long, $5\frac{1}{2}$ inches wide and $\frac{3}{4}$ inch thick. The strips of wood are fastened under the ends so that wires may be run underneath for connections. After the holes for the detector binding post and also the holes for the telephone binding posts U have been drilled the board should be coated with paraffin.

Crystal Detector.

The galena crystal D may be mounted as pictured in Figs. 1 and 2. The holder for the crystal is a metallic pinch clip, such as the ordinary battery test clip or paper clip. This clip should be bent into a convenient shape so that it may be fastened to the base.

The wire X which makes contact with the crystal is a piece of fine wire (about No. 30) which is wound into the form of a spring and attached to a heavy piece of copper wire (about No. 14). This heavy wire is bent twice at right angles, passes through the binding post and has a wood knob or cork fixed to its end as shown. It is desirable to have the fine wire of springy material, such as German silver, but copper wire may be used if necessary.

The importance of securing a tested galena crystal cannot be emphasized too strongly, and it should be understood that good results cannot be obtained by using an insensitive crystal.

Assembling Coupler.

The movable portion of the coupler should be assembled first. As shown in Fig. 1, the fittings making up this part of the set are the movable base L, the coil tube support M and the coil tube S. Insert in M the six switch contacts (machine screws), the switch arm and the binding posts in the proper holes, which have been drilled. Adjust the switch arm until it presses firmly on the contact points (both heads) and fasten the bar end of a No. 24 copper wire between the nuts on the end of the switch arm bolt 2 (Figs. 1 and 2), which projects through

the panel M. Wind this wire into the form of a spiral of two or three turns like a clock spring, leaving a few inches of the wire for connection. Insert two small screws V (Fig. 1) in the panel M, so that the switch arms will not drop off the row of contact points when the knob is turned too far.

The coil tube S is now ready to be fastened in position on the panel M. Cut a 1 inch hole in the cardboard end of the coil tube, and place it with the closed end next to the panel M in such a position that it will be just below the row of nuts and washers (switch contacts) and in the centre of the panel M with respect to the sides. Fasten it to the panel with short wood screws. The switch arm bolt, with the spiral wire connected to it, should project through the hole cut in the end of the coil tube. Thread the end of this wire through a hole punched near the end of the coil tube next to the panel, and connect this wire to the back of the binding post W (Figs. 1 and 2). The wire F (Fig. 2) is now connected to the back of the binding post Q. There now remain five twisted taps and one wire to be connected to the six switch contacts. The taps should be cut off about $1\frac{1}{2}$ inches from the coil tube, and the insulation removed from the pairs of wires thus formed. Each pair of wires should be twisted together, as shown at J (Fig. 2). The connections are now made by clamping the five taps, and also the end of the single wire between the nuts and washers on the contact bolts. The connections are clearly shown in the diagram.

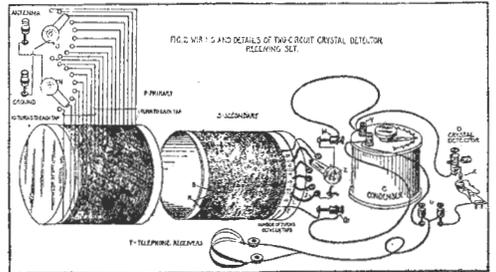
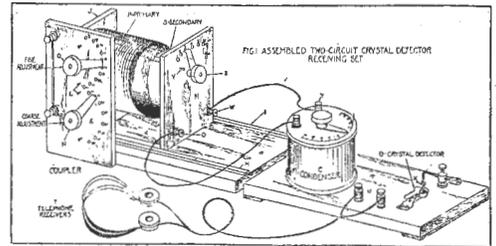
We are now ready to assemble and wire the fixed portion of the coupler, composed of the base B, coil support J, panel K and coil tube P.

Screw the panel to the base and to the support J, and insert the binding posts, switch arms and bolts and contact bolts in the proper holes. The switch arms should now be adjusted so that they make firm contact on the heads of the bolts. Now insert four small screws E (Fig. 1) in the front of the panel so that the switch arms will not drop off the row of contact points when the knobs are turned too far. Insert a wire between the nuts on the end of the lower switch-arm bolt N where it projects through the back of panel K (Fig. 1). Wind the wire into a spiral of one or two turns like a clock spring and connect the end to the upper binding post, which is marked "antenna." These connections will be understood by referring to the upper left-hand corner of Fig. 2.

In the same manner connect another wire from the upper switch-arm bolt to the lower binding post, which is marked "ground." (See Fig. 2.) The connecting wires should be insulated except where a connection is needed, and should not touch each other. Two short pieces of wire are now fastened to the binding posts in the front of the panel, as previously explained.

The coil tube P should now be laid on the base in about the same position as it is shown in Fig. 1. The sixteen twisted taps and also the two single wires from the ends of the winding are now to be connected to the back of the eighteen contacts on the panel K. Scrape the cotton insulation from the loop ends of the sixteen twisted taps as well as from the

This Is How the Two-Circuit Receiver Looks When Finished



ends of the two single wire taps coming from the first and last turns. Fasten the bare ends of these wires to the proper switch contacts. Be careful not to cut or break any of the looped taps. The connecting wires may be fastened to the switch contacts by binding them between the washer and the nut. The order of connecting the taps may be understood by referring to Fig. 2.

Carefully raise the coil tube P against the support J to such a position that when the coil tube S of the movable section of the tuner is pushed in the coil tube P the space between the two tubes will be equal all around. Mark this position of the coil tube P on J and fasten it to J with short wood screws.

Wiring Condenser and Detector.

The mounting of the condenser C and the crystal detector D on the base R is clearly shown in Fig. 1. A wire is run from the binding post Y on the variable condenser C, through a small hole in the base R, and is then connected to the under side of the detector binding post. Another wire is now run from the clip which holds the galena crystal through a small hole in the base, and is then connected to the under side of the right-hand binding post U. The left-hand binding post U is next connected to the binding post on the variable condenser, which has no wire attached to it, by running a wire under the base and up through a small hole. The wiring will be understood by referring to the right-hand portion of Fig. 2. The wires may be the same size as were used for winding the coil tubes, and should be insulated. Two pieces of wire should now be connected from the binding posts W and Q (Figs. 1 and 2) to binding posts on the variable condenser. The telephone receivers T are now connected to the binding posts U and the receiving set is complete, except for connecting to the antenna and ground.

Connect the antenna lead and ground wire

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to the binding posts marked "antenna" and "ground." With proper connections to antenna and ground, you are ready to operate your apparatus.

Directions for Operating.

Push the coil tube S (secondary) about half way into the coil tube P (primary) and set the switch 2 on contact point 4. The primary switch 4 may be left in any position. The wire which rests on the crystal detector must be placed lightly at different points on the crystal until the transmitting station is heard, when the set is adjusted as described below. During this operation the primary switch N should be set on contact point 8.

Having adjusted the crystal detector to a sensitive point, the next thing is to adjust the switches on the coil tube P (primary), the switch on the coil tube S (secondary) and also the variable condenser C, so that the apparatus will be in "resonance" with the transmitting station. Set the primary switch N on contact point 1, and while keeping it in this position move the other primary switch O over all of its contacts, stopping a moment at each one. Care must be taken to see that the ends of the switch arms are not allowed to rest so that they will touch more than one contact point at a time. If no signals are heard set the switch arm N on contact point 2 and again move the switch arm O over all of its contacts. Proceed in this manner until the transmitting station is heard. This is called "tuning" the primary circuits.

The tuning of the secondary circuit is the next operation. Set the secondary switch Z on contact point 1 and turn the knob of the variable condenser C so that the pointer moves over the entire scale. If no signals are heard set the switch on contact point 2 and again turn the knob of the variable condenser so that the pointer moves over the entire scale. Proceed in this manner until the signals are loudest, being careful to see that the ends of the switch arms touch only one contact point at a time. Next slide the coil tube S (secondary) in and out of the coil tube P (primary) until the signals are made as loud as possible. This operation is called changing the "coupling." When the coupling which gives the loudest signal has been secured it may be necessary to readjust slightly the position of the switch arm O, the

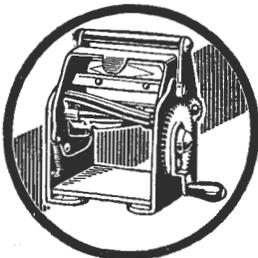
position of the movable coil tube S and the "setting" of the variable condenser C.

The receiving set is now in resonance with the transmitting station. It is possible to change the position of one or more of the switch arms, the position of the movable coil tube and the setting of the variable condenser in such a manner that the set will still be in resonance with the same transmitting station. In other words, there are different combinations of adjustments which will tune the set so that it will respond to signals from the same transmitting station. The best adjustment is that which reduces the signals from undesired stations to a minimum, and still permits the desired transmitting station to be heard. This is accomplished by decreasing the coupling (drawing coil tube S further out of coil tube P) and again tuning with the switch arm O and the variable condenser C. This may also weaken the signals from the desired transmitting station, but it will weaken the signals from the undesired stations to a greater extent, provided that the transmitting station which it is desired to hear has a wave frequency which is not exactly the same as that of the other stations. This feature is called "selectivity."

Materials and Cost.

The following is a list of the articles required and their approximate cost to be used in building the above set:

	s.	d.
6 ozs. No. 24 double cotton-covered copper wire	3	0
2 round cardboard boxes	1	0 each
3 switch knobs and blades (complete)	3	0 each
24 switch contacts and nuts	2	0 doz.
3 binding posts (set screw type)	9	0 doz.
4 binding posts (any type)	9	0 doz.
1 crystal (tested)	1	6
3 wood screws (brass), $\frac{3}{4}$ inch long	2	
2 wood screws for fastening panel to base	1	
Wood for panels (from packing box)		
2 lbs. paraffin	2	0
Lamp cords (6 ft.)		
Telephone receivers	40	0
1 battery clip for crystal	1	3
Miscellaneous screws		6
1 variable condenser	50	0



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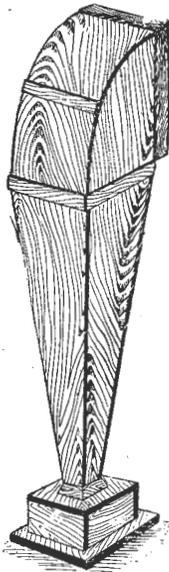
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HOW TO BUILD A LOUD SPEAKER

By PAUL G. WATSON

A GREAT many designs of loud-speaking receivers are on the market to-day, all with metal horns of some form or other. With practically no exceptions, these devices reproduce music and voice with a harsh, metallic sound similar to old models of the phonograph. The present models of loud speakers are somewhat smaller in size than the wooden horn described in this article. They are designed to be placed on a table or stand, while this wooden horn is of sufficient size to stand on the floor, in the parlor or such places where a finished piece of apparatus is necessary. This horn, as described here, will stand from 36in. to 40in. high, and requires a floor space about 10in. square.

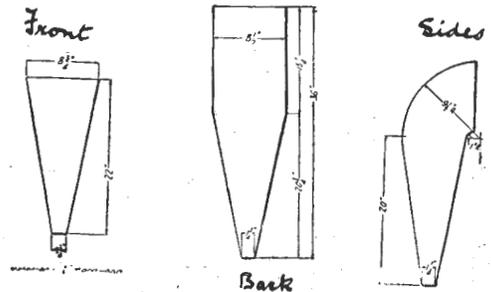


Such a Wooden Horn Amplifies the Sound Produced by a Telephone Receiver, Thus Making a Loud Talker Without a Tiny Sound

The reproducer unit is a Baldwin type "C" mica diaphragm telephone. It is mounted in the box at the base of the horn, the method of which is shown in the cross sectional drawing of the base. The receiver unit is clamped against the top of the base by a wooden strip, held in place by two long wood screws passing through the strip into the top of the box. Pads of rubber are placed wherever the receiver

case touches the base. Pieces of an automobile inner tube will serve this purpose. The phone should be mounted firmly, but not tight enough to crack the case.

The dimensions of the base are of minor importance, as long as the base is large enough to keep the horn upright, a size from 9in. to 10in. square being about right for the horn described here. The height of this box, or base, should be about six or seven inches.

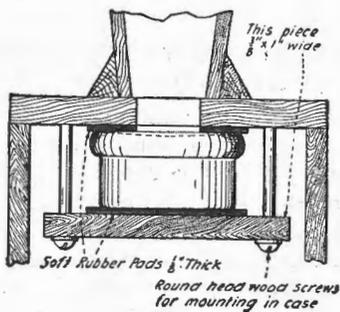


The hardest feature in construction is the bending of the front and back panels. The proper way to do this is to boil the parts to be bent in water for several hours and then bend them over a form, on which they are allowed to dry. Much of the tendency to spring out of shape is eliminated by this method of bending. The cleats shown in the assembly drawing prevent the thin material from bending or warping after it has been put in place. They should be fastened with small brass wood screws and glue. Only cleats necessary for strengthening the horn are shown in the drawing. A much neater appearing horn can be had by working these cleats into a system of panelling. To bring out the points where strength was needed the remainder were omitted. The cleat passing under the front panel, having the short bend, should have its upper side rounded to fit this bend, and should be glued and screwed in place. In any case, where cleats are added, it must be on the outside to give a clear passage for the sound.

The four pieces of the horn are fastened together after bending and drying, with small nails and glue. The joints in the

straight section of the horn can be strengthened by the addition of triangular blocks, glued in the corners. A small brass bracket may be placed under the cleats at the large end of the horn to hold the joint together if necessary. The lower end of the horn should be squared off, and is fastened to the base by four triangular wooden blocks mitered around the lower end of the horn. These blocks should be screwed and glued to the horn, and then fastened to the baseboard in a like manner, making a very rigid joint.

The remainder of the base is put together with round head screws and has no complicated details, being only a simple wooden box, made of $\frac{1}{2}$ in. stock, while the bottom or baseboard is made of $\frac{3}{4}$ in. stock. A small hole is drilled in one side for the phone cord to pass, or, if desired, a pair of binding posts can be placed on the top of the base.



I have found this loud speaker to give much clearer signals when handling strong signals than any other phone I was able to get. It is particularly desirable to have a clear phone if voice, such as a radio sermon, is being reproduced, and in this case this loud speaker is fine to have it talk to an audience.

The finish of the piece can be of any desired colour or nature. It is well to give the inside of the horn several coats of good varnish to produce a clear, smooth surface for the sound to travel over.

In concluding this article, it might be well to bring out the principle involved in a loud-speaking receiver, or, in fact, any horn. There is no amplification in the horn of any nature. The horn serves as the connecting link between the small volume of air, which vibrates with the receiver diaphragm, and the outside air of the room.

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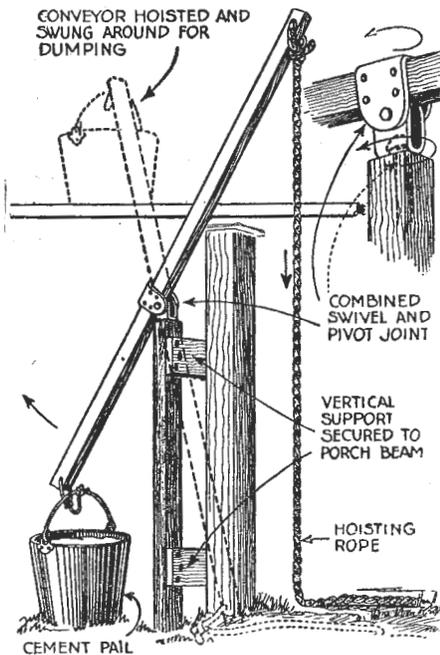
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In order to keep this section as bright and up-to-date as possible we seek the co-operation of our readers. By contributing simple constructional and experimental items—written in non-technical language that will occupy space varying from a small paragraph to a full page or more—accompanied by diagrams and illustrations, readers will materially assist. All contributions will receive our most careful consideration and, if accepted, will be paid for on publication.—Ed.

SIMPLE HOIST FOR DELIVERING CEMENT TO SECOND FLOOR.

THE hoist rigging here shown is a practical application by a local builder of a lever lift used in placing a cement porch on the second floor of a building. The usual practice is to hoist the cement hand over hand with pulley and rope.



A pull on the rope raises the pail of cement, which then is swung over the platform

In this instance a vertical support was placed near the porch, bearing a combined swivel and pivot joint connecting with the lever, which was a "two by four" about 16 ft. long. At one end a large pail was

fastened and a rope at the opposite end was used for hoisting.

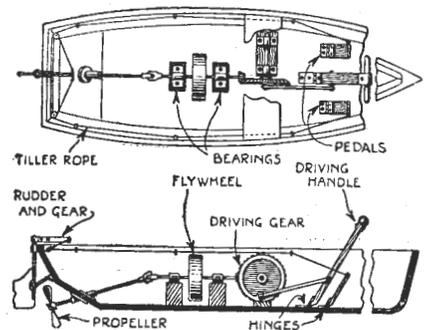
The pail, when empty, practically balances the beam and lowers automatically for refilling. When the filled pail is hoisted the lever is turned about on the swivel and swings the pail in on to the platform, where it is dumped.

—G. A. L.

OLD AUTO PARTS WILL PROVIDE POWER FOR ROWBOAT.

A rowboat can easily be fitted up with old automobile parts so that it will have a propeller drive operated by hand power—something like a railway handcar.

From an auto-wrecking yard obtain a bevel gear as large as possible, and a pinion to mesh with it. Attach a heavy disk of sheet iron, about 14 gauge, to the gear with



Top and side views of propelling mechanism

bolts. Mount the bearings as shown and provide a shaft with an old gas engine flywheel keyed to it. Connect it with the propeller shaft by means of a universal joint, which may be made from two clevises. See that the mountings are rigid, so that there will be as little play as possible,

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and provide the stern bearing with a gland and stuffing to prevent leakage.

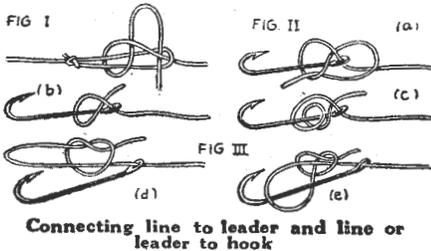
The hand lever is a heavy stick of wood, 2 ft. or more in length, hinged to the bottom of the boat. Make a connecting rod of iron, so that moving the handle back and forth will drive the gear, pinion, fly-wheel and propeller. The steering gear is operated by two pedals hinged to the bottom of the boat.

—*Sherman Terry.*

KNOTS THAT ALL FISHERMEN WILL FREQUENTLY FIND USEFUL.

The hitch shown in Fig. 1 is excellent for connecting the line to the loop of the gut leader. Generally the fisherman makes a solid knot and often has to cut it off and make a new knot, but this one, while it holds well in service, will come undone when the short end is pulled.

In Fig. II. are shown three methods for connecting either the line or the gut leader to the hook. The knot at *a* is one that should recommend itself to the fisherman



Connecting line to leader and line or leader to hook

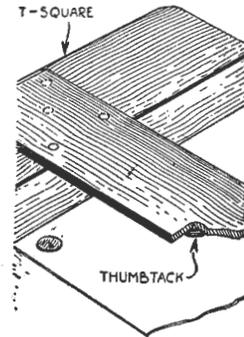
on sight; it is simple and cannot come undone. To loosen it, push on the long end of the line. The knot at *b* is another good one. Put the line or gut through the eye as shown and draw tight. Do not clip the spare end too close. The same principle is involved in the knot at *c*, except that two loops are thrown around the hook shank.

The so-called turtle knot, with which many fishermen are not familiar, is shown in Fig. III. Slip the end of the gut through the hook as shown at *d* and loop it; then extend the loop over the hook, as at *e*, and draw all parts tight. Anglers will find this a good hitch for attaching the fly hook to the leader.

—*Robert Page Lincoln, Popular Mechanics.*

TO PREVENT A T-SQUARE RUBBING A PENCIL DRAWING.

Three or four small highly polished thumbtacks placed under a T-square will



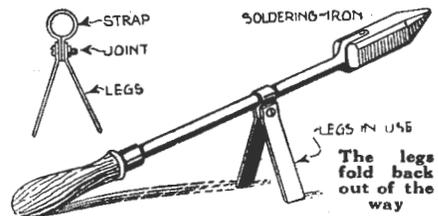
Thumbtacks raise the blade above the paper

keep it raised above a pencil drawing sufficiently to prevent the lines from becoming rubbed and soiled by the constant shifting of the T-square. This is also helpful when working near the thumbtacked edges of the paper.

—*Frank Hazarim.*

A SOLDERING-IRON HOLDER.

A mechanic is often at a loss where to lay his hot soldering-iron. He would not



hesitate if the iron had a holder similar to the one shown. It is made of a heavy strip of brass, and is so constructed that it can be folded up when not in use.

The two legs hold the iron a little above the bench where there is no danger of anything catching fire. To make the holder takes but a few minutes, and it will save a lot of time.

—*W. C. Royer, Popular Mechanics.*

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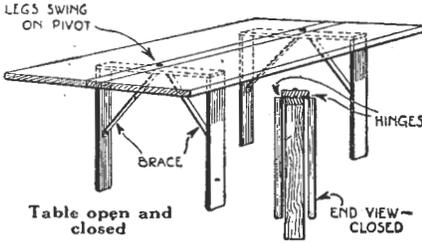
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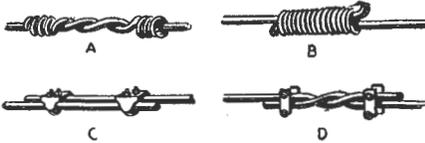
dated in the limited space inside their cars. The folding table illustrated below is an example of a serviceable table. When extended it is of good size, but, folded, it is a compact package, easily carried inside the car.

Two large leaves are hinged to a narrow centre board, to which the legs are also secured by means of centering pins. To close the table the legs are turned around beneath the centre board and the side leaves are folded against them.

—G. A.

SPLICING ELECTRIC WIRES.

Four of the most efficient methods for joining electrical conductors are shown in the accompanying diagram. Figures *A* and *B* are twisted joints, the second being more quickly made, but not so strong as the first.



Four joints that are good connections electrically and mechanically

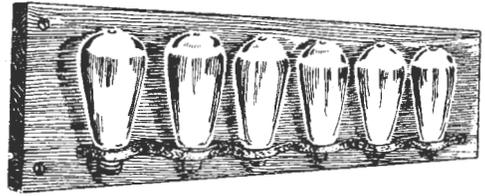
In *C* the wires are shown held together with wire rope clamps. If the space between the clamps is well soldered this joint is good for temporary purposes, since the wires may be taken apart quickly.

A more durable joint is shown at *D*, where the wires are twisted and clamped. All these joints have to be well soldered to be of highest value.

—B. H. W.

A USE FOR OLD ELECTRIC LIGHT BULBS.

Cheap fire extinguishers for the garage or workshop can be made of a number of old electric lamp globes. The lamps are placed in a rack, such as the one illus-



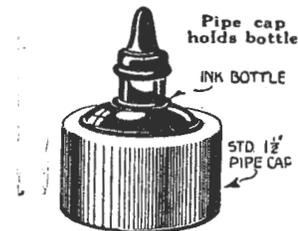
trated, after being filled with water, or, better, with some solution, having special fire extinguishing properties. Such a solution can be made by taking 20 parts calcium chloride, 5 parts of common salt, and 75 parts of water. The globes are filled by immersing them in a large dish or pail containing the solution and breaking off the tips with a pair of pliers. They will fill quickly owing to the fact that the air has been largely exhausted from them during manufacture.

When a fire occurs one or two of these globes are thrown at the burning object. The solution will spread over it and extinguish the fire.

—G. N. W.

HOLDER PREVENTS INKSTAINS.

This sketch shows a very useful holder for a draftsman's ink bottle. It is heavy enough to make the spilling of ink practically impossible.



The holder is a $1\frac{1}{2}$ -in. standard galvanized pipe cap, which is just large enough to receive the regulation small drawing ink bottle.

—Alexander Grabau.

KEROSENE HAS MANY USES IN THE HOUSEHOLD.

Kerosene is one of the most useful items on the list of indispensable household articles. A bottle or can of it should be in every home. Its usefulness as a fuel is well known to every owner of an oilstove.