

(Continued from page 874.)

SHIP.	OPERATOR.	SHIP.	OPERATOR.
Kawatiri	W. H. Richardson	Period	H. Wormwell
Kekerangu	R. P. Ginders	Poolta	H. Bashford
Komura	E. S. Bailes	Rakanoa	
Kooringa	V. J. Foreman	Riverina	L. G. Devonport
Koonda	M. G. Crockett	Rotomahana	
Kooyong	W. H. Jowett	Saros	H. Warner
Koromiko		South Africa	F. G. Lewis
Kowarra			W. J. Washbourne
Kurow	L. E. Hudson	St. Albans	D. Soraghen
Lameroo	J. Elmore		A. S. Torrens
Levuka		St. George	S. G. Jones
Loongana	H. F. Harman	Suva	L. S. Lane
Macedon	G. Poole	Tahiti	F. E. Duggan (s)
Mackarra	S. L. Filer		L. E. Ternes (2nd)
Macumba	F. C. Smith	Taiyuan	J. H. Wilkin
Maheno	A. W. Watt		W. C. Smith
Maindy Lodge	H. S. Chown		W. Macgoun
Makambo	D. N. Quinn	Talawa	
	H. F. Hartley (s)	Talune	
Makura	N. W. Leeder (2nd)	Tarawera	
Malayan		Tarcoola	R. G. Wright
Mallina	A. G. Dixon	Time	T. J. O'Leary
Manuka	J. A. Heavey	Tofua	L. R. Dickson
Maori	J. H. Bennett	Toromeo	J. A. Guy
Marama	C. F. Griffiths (s)	Ukmaroa	H. Tuson
	O. Ling (2nd)	Urilla	N. W. Marshall
Mararaoa			H. Fullerton (s)
	W. H. Harris (s)	Victoria	G. B. Fullwood (2nd)
Marella	H. W. Barnfield (2nd)		F. M. Barsden (3rd)
	G. J. Flynn (3rd)	Waihemo	C. Williamson
Marawah	J. L. Skinner	Wahine	R. S. Taylor
Marsina	A. Cuthill	Waihora	E. A. Hunter
Mataram	F. C. Davies	Waikawa	V. P. Nevins
Maunganui		Waikouaiti	J. A. Cooper
Melbourne	A. B. Monks	Waimarino	F. L. Dawes
Melusia	E. J. Giles	Waiotapu	T. H. McWilliams
Merriwa	J. H. Pullen	Waipori	W. C. Brown
Milluna	J. Overbury	Wairuna	F. N. Davidson
	J. G. C. Higgins (s)	Waitemata	K. J. Dines
Minderoo	A. F. Plowman (2nd)	Waitomo	E. M. Bain
	S. Kings (3rd)	Wanaka	J. G. Henderson
Mindini	R. Jordon	Warspray	
Moana		Wear	L. F. O'Donnell
Moeraki		Werribee	R. J. Inglis
Moirra	N. W. G. Scott	Westralia	
Mokioia		Whangape	O. A. Sutherland
Monaro	G. H. Hore	Waingatut	A. E. Laurence
Monowai		Wodonga	G. Pow
	A. L. Dixon (s)	Woolgar	J. Glennie
Montoro	W. S. Ringrose (2nd)	Wyandra	T. Chalmers
	F. B. Harris (3rd)	Wyreema	
Moorabool	M. Sedgers	Yankalilla	W. C. Lucas
	C. W. Donne	Zealandia	B. Boni
Moreton Bay	F. A. Noar		
Morinda	C. H. A. Kidman		
Nairana	M. R. H. Ryan		
Nardoo	R. McNamara		
Navua			
Ngalo	C. F. G. Taylor		
Ngakuta			
	W. J. Martin (s)		
Niagara	E. W. Coldwell (2nd)		
	J. D. Wood (3rd)		
Omana	A. J. Sawyer		
Ooma	A. E. Sheppherd		
Oonah			
Paloona	G. M. Whiteside		
	K. L. Simpson (s)		
Parattah	E. C. Bouel (3rd)		
	E. Pollard (3rd)		

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"SEA, LAND and AIR"

THE AUSTRALIAN NATIONAL MONTHLY

— OF —

TOPICAL INTEREST

Edited by S. E. TATHAM.

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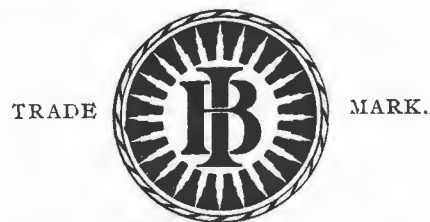
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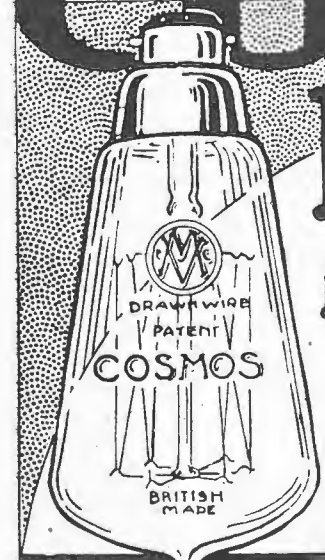
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SEA LAND AND AIR

AUSTRALIA'S
NATIONAL
MONTHLY

VOL. IV.

MARCH 1, 1922.

No. 48.

TOPICS OF THE MONTH

WHY REASON SHOULD PREVAIL

EVEN the most thoughtless and indifferent people in our midst are beginning to realise that the present is, perhaps more than ever in our history, a time for clear thinking and sane reasoning if we would steer clear of the pitfalls which threaten to strangle our industrial, and therefore our national, life.

The ablest minds the world over are being exercised in finding a means whereby the inevitable after-war reaction may be assimilated without resort to a disastrous industrial struggle which, to a more or less extent, appears imminent. It is surely a confession of the obstinacy and selfishness of human nature when such an admission has to be made. One would have thought that mankind would have been steeled by the happenings of the past few years to accept as inevitable a change from the artificial standards which reigned during the war period. The threat to enslave the world which a self-seeking people flung in our face had the effect of binding all classes and creeds into a union that, by the very magnitude of its strength and the loftiness of its purpose, compelled success. It is a sad commentary on the courage, unselfishness and patriotism of a people who, by sinking all petty differences in

the face of a common foe, emerged victorious, if now when our domestic affairs have to be put in order we substitute selfishness and narrow-mindedness for the lofty ideals of a few years ago. The present is not a time for destructive criticism, unless our condemnation be directed towards the ill-advised policy of individuals and parties who would sacrifice without compunction, Australia's national well-being in order that their own interests may remain paramount. It is useless to argue that because other countries have failed to find a satisfactory means of reconciling the interests of Capital and Labour, that our efforts must be attended by a like result.

An appeal to the reason and common-sense of the people of Australia cannot surely fall on deaf ears. It cannot be too strongly emphasised that we have all to gain and nothing to lose by settling our industrial troubles peaceably, and settling them right. A conflict between employers and employees invariably results in a humiliation of one side or the other with its attendant feelings of bitterness, and a desire to "get even" at the first opportunity. In the isolated cases where the agreement arrived at, after a more or less prolonged struggle,

is both reasonable and amicable, we have an illustration of what could have been accomplished in the first instance, without resorting to extreme measures, if only the proper spirit had prevailed on both sides. Capital and Labour must be

friends and work harmoniously together if this country is to ever attain a position of national greatness. This applies not only in a commercial sense, but to the standards on which our home life will rest.

FUTURE OF SHIPPING

SHIPPING men both at home and abroad are complaining bitterly of the hardships under which the industry is now being carried on. The burden of their complaint is that wages, hours and conditions of the crews, coupled with the high cost of fuel and other operating expenses make it impossible to run the services they would like, at anything approaching a reasonable margin of profit.

Certainly the number of idle ships in the different ports of Australia bear eloquent testimony to the fact that, whatever may be the cause, all is not well with the shipping industry. The whole problem would need to be examined thoroughly and impartially to discover the true causes of the stagnation, and prescribe a remedy. There can be no question, however, that if the decline in the number of ships serving Australia's needs, both overseas and inter-State, is to continue at the same rate as during the past few years, the position will be serious.

Even the most unthinking person will admit that Australia's progress and prosperity depend very largely on her shipping services. It is not difficult to foresee what the position would be in a very short time if those services were reduced beyond what is required to regularly and adequately serve the needs of our export and import trade. The point is frequently and forcibly stressed, that this country will only attain a full measure of greatness when, under a decentralised scheme of settlement, every corner is populated, and served by railways or other means of transport. The full fruits of such a desirable aim

can only be secured by having at our disposal the necessary volume of shipping to carry our produce to the markets of the world. It is plain, therefore, that the people of Australia are vitally concerned in the maintenance and growth of her shipping services.

It is not to be expected that either the Government or private enterprise will be sufficiently philanthropic to carry on a losing proposition indefinitely if there are causes behind the leakage which will yield to proper treatment. In the former case it would be bad business, and so far as private enterprise is concerned the interests of shareholders have at all times to be considered. Australia's present volume of trade may not be very great, but it is steadily growing, and we can reasonably hope that in a few years it will have reached dimensions sufficiently large to make the business of transporting our produce and requirements to and from other countries a highly profitable one.

It is clear, therefore, that the growing curtailment in the number of ships serving Australia's needs is not due so much to lack of trade as other influences. What those influences are, and how to overcome them, is the problem that must be faced.

Competition is a good thing when it is confined to legitimate channels, but when it manifests itself in the form of a futile clashing of interests between employers and employees in any one industry, it can only bring about disastrous results. It is to everyone's interest to see the

present stagnation in shipping overcome as speedily as possible. Before this can be hoped for it is plain that the people

of Australia, will have to insist on the cause thereof being carefully diagnosed and a remedy prescribed.

AUSTRALIAN INVENTORS

IF the man in the street were asked to indicate what the world owes to the inventive genius of Australians, he would probably reply, "Very little." This answer would not indicate the true position, but would merely be a reflex of what the average person knows, and it might be added cares, about the efforts of many enterprising sons of Australia to make this country live in history as the birthplace of a great inventor. There is a pathetic feature about this lack of public interest and appreciation of what Australians have accomplished in solving many of the problems which baffled the best brains of older countries. It is a fallacy to suppose that the universal adoption of some new inventive design ensures an adequate reward to the man who evolved it. Too frequently it happens that after long years of experimenting and countless failures, success comes only when the pioneer of that particular invention is in the autumn of his life, and the wealth and public appreciation which should have been his fall to his successor. This is to a great extent unavoidable, and does not constitute the serious indictment which can be levelled at the Australian people for their failure to recognise the good work done by many of our own men. It is common history that the war brought to light the skill and ingenuity of many Australians to an extent unequalled, on a population basis, by any other country; but long before that period there were men in our midst who had solved the initial difficulties of at least some of the achievements at which the world has since marvelled.

The credit of solving the great problem of human flight has time and again been bestowed where it does not rightly belong, and even quite recently a cable announced that the honor had been finally awarded to the Wright Bros., for their first flight in 1903. As a matter of fact the Australian, Lawrence Har-

grave, in 1884, nearly twenty years before the Wrights made their ascent, demonstrated that human flight was possible. The tragedy of it all is that Hargrave died a broken and disappointed man. After a proposal that the State should acquire and house his models had been rejected by the Government of the day, an appeal was made to the Commonwealth to come to the rescue. In the interval which elapsed between the appeal and the reply, which was in the affirmative, the inventor had handed over his designs to some Munich professors. Later, the knowledge that the results of his labors and experiments were in possession of the enemy Powers, coupled with the fact that much of the success achieved by their aerial forces during the early part of the war was probably due to his inventive genius, had a most depressing effect on the great Australian inventor. Numerous other instances could be quoted indicating how other countries have profited by the labours and research of Australian inventors and designers simply because we have been too apathetic and indifferent to appraise their efforts at their true worth. To mention two, wireless control of ships, and portraits by wireless is to realise how high our national prestige might have been lifted if we had backed up the discoveries made by two Australians. In 1912 a successful demonstration of the former contrivance was given in Sydney by a young Australian inventor, Alban Roberts, while the secret of how to transmit portraits by radio was practically demonstrated in Sydney and other capital cities of Australia by Reginald Wilkinson in 1910.

History has a habit of repeating itself, but it is to be sincerely hoped that in the treatment of aspiring inventors and designers, the Australian people will never again exhibit the same carelessness and indifference as they have shown in the past.

AT THE TOP OF THE TREE

SIR JAMES BURNS' RISE TO WEALTH AND POSITION

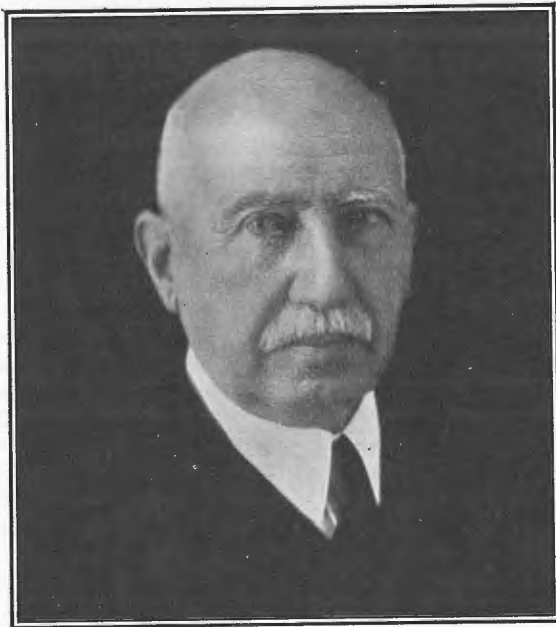
HOW COURAGE AND AMBITION WIN OUT

THERE are few better known men in Australia to-day than Colonel the Hon. Sir James Burns, K.C.M.G., M.L.C., head of the shipping firm of Burns, Philp & Company, and director of many leading companies and institutions in Sydney.

Sir James passed his seventy-sixth birthday a couple of weeks ago and is still hale and hearty, although he only quite recently recovered from a long illness. The story of his rise to wealth, influence, and public esteem illustrates the possibilities ahead of all young men, built of the right stuff, who are prepared to put their shoulder to the wheel and work hard to achieve an objective.

Born at Edinburgh in 1846, Mr. Burns came to Australia at the age of sixteen with an elder brother, and landed at Brisbane. Station life attracted him at the beginning, and for two or three years he followed that pursuit and thereby gained a good knowledge of his surroundings. Later he joined his brother in business at Brisbane, where he remained until the gold discovery at Gympie attracted him by the possibilities which it offered. A rough overland journey on horseback brought him to the scene of activities, and after a careful survey of the situation he decided that in selling stores and supplies to the miners and buying their gold in return, lay a more fruitful source of wealth

than the actual laborious work of digging for the precious metal. His judgment in this, as in most undertakings in which he engaged through life, proved correct, and he soon had branch stores at One-Mile Creek and Kilkivan. These continued to prosper and the future of their proprietor seemed assured, when Mr. Burns' father died in Scotland in 1870. Immediately on receipt of the news he sold out his businesses in Australia and returned to his native land. Australia, however, was firmly engraved on his heart and mind, and two years later he returned to these shores and proceeded to Townsville (Queensland) where he laid the foundation of the business which later developed into the great firm of Burns, Philp & Co., Ltd.



SIR JAMES BURNS, K.C.M.G., M.L.C.

Store-keeping in those days was beset with difficulties, particularly in such a (then) isolated place as Townsville. Communication with Sydney and the northern ports was by means of small steamers which ran at irregular intervals, and consequently a shortage of supplies was one of the drawbacks under which Mr. Burns opened his business. However, this was a difficulty which his energy and enterprise soon overcame; and before it had been established very long a regular and plentiful supply of stores were being conveyed by horse waggons to the stations and goldfields from Burns' store at Townsville.

As North Queensland grew, so did the enterprising business pioneer, but the work and the climate proved a heavy strain on his health, and he wisely took into partnership Mr. Robert Philp, who up to that time had been associated with the firm of Bright Bros. & Co. (now Gibbs, Bright & Co.). The partnership was effected in 1876, and a year later Mr. Burns moved to Sydney, leaving his partner to conduct the North Queensland business, while he himself commenced operations in Sydney, and later established branches at Normanston and Thursday Island. In 1883 both Mr. Burns and Mr. Philp realised that a partnership would be an excellent proposition, and accordingly in that year was effected the union of business interests known as Burns, Philp & Co., Ltd.

The growth of the business from that time up to the present is too well known to need reiteration. It is sufficient to say that the enterprise grew and expanded year after year, until to-day the firm of Burns, Philp & Co., Ltd., is well known in practically every port in the Pacific, and in every island of the Western Hemisphere the company is represented.

In spite of the great activity which he displayed in business concerns, Mr. Burns found time to interest himself in many matters outside purely commercial circles. Public and charitable organisations benefited as a result of his keen and whole-hearted interest, and it was inevitable that his wide commercial knowledge should be recognised by the Government of the day who elevated him to a seat in the Legislative Council in 1908. Mr. Burns' military career commenced in 1891, when he joined the Parramatta Squadron of the New South Wales Lancers as a trooper. Here again his ability soon won recognition, and in the same year he gained his commission as captain. In 1897, after serving with distinction in the regiment, he was appointed Lieutenant-Colonel com-

manding the 1st Australian Light Horse Brigade. Owing to the military regulations governing the age limit becoming operative in his case in 1907, Colonel Burns was forced to retire from the mounted service in that year. He had done much for the service during his connection with it, and it was largely through his efforts that a number of Australian officers and men were sent to Aldershot in 1899, where an opportunity was afforded others of judging what a really fine specimen the Australian soldier is.

And so the life of the subject of this sketch rolled on. He was never idle and his activities always lay in the direction of helping along some organisation or enterprise, the success of which was reflected in the increased prosperity of his adopted country. In 1917 His Majesty the King conferred the honour of knighthood upon Mr. James Burns, and it is safe to say that not one person in the community considered the distinction as other than fully merited by the recipient's many sterling services to the country.

If there is one feature of Sir James' life more worthy of mention than another, it is the putting into operation in the autumn of life of his long cherished desire to do something of outstanding benefit for charitable work in Australia. And he has succeeded in a manner which will ensure his name being revered by posterity to a degree greater perhaps than he has ever dreamed. The Burnside Orphan Homes at Pennant Hills (New South Wales), comprising a dozen modern villas, each of which is a gift from some wealthy Scotchman or Scottish organisation, are all built upon land given by Sir James Burns. Could any man leave a more enduring monument to his memory than these homes in which little orphan children find the best possible substitutes for home life and parental love?

"The true University of these days," said Carlyle, "is a collection of books, and all education is to teach us how to read."

Better believe yourself a dunce and work away than a genius and be idle.

The moment others see that money-grabbing is your dominant passion, then the bud of your nobility perishes.

Without economy none can be rich, and with it none need be poor.

LIFE IN UNKNOWN AUSTRALIA

HARDSHIPS OF "BLAZING THE TRAIL"

HOW SETTLERS FIGHT A DROUGHT

By FRANCIS BIRTLES

One has actually to see life as it really is in the "great outback" country of Australia to appreciate the dauntless spirit of the settlers who, year in and year out, resolutely pursue the game of life in spite of the almost unbelievable hardships which fall to their lot. It is of this life that Francis Birtles writes, and his story carries the impress of truth which only an eye-witness could impart.—Ed.

A FEW days after leaving Innamincka and while travelling towards the south-west corner of Queensland, I entered a locality where the few white settlers are fighting a grim battle with the drought fiend. Mobs of cattle and horses are watering at one small well, which provides barely enough liquid to sustain life in them all. Three white men, toiling like galley slaves, are busily engaged day and night in bailing water from a depth of eighty feet for the bellowing, kicking and struggling animals. Any cessation of their efforts would mean the perishing of scores of dumb creatures. At night, in the glare of a lighted torch, strange sights are to be seen. A blackfellow hunts the frantic beasts away until the troughs are filled. Dingoes and night animals rush down to the water, have their fill, then hurriedly decamp. In the black background gleam hundreds of eyes, and there arise the continual roar of the impatient and restless cattle. Misty clouds of dust are over all. One beast, more venturesome than the rest, charges the aboriginal, who jumps behind the troughing. The animal slips and falls in. A blackboy, to make the exhausted beast rise, twists its tail. Slipping, bellowing and sliding the bullock gets out, charges, and staggers back to the mob.

An Old-Time Ring Companion.

One marvellous, bearded old man, even now a giant in size, though over sixty years

of age, is toiling on the windlass with the energy of a man of twenty. He is one of Broken Hill's old-time champion boxers, an opponent of Fitzsimmons in the prize ring. Retiring to my camp nearby, I find a poddy calf has swallowed my best Assam silk shirt, and hanging halfway out of its mouth is the leg of a pair of my trousers. Making a course between high sand ridges and over volcanic ash heaps, I headed away from the Diamantina River. The going was very heavy, and on low gear the car sank up to the axles in brick-red and yellow dust. The latter is called "bull-dust," owing to cattle being in the habit of rolling in these patches. This dust has a peculiar effect on muddy water. A little sprinkled in a small pool will soon clarify it in much the same manner as alum will purify drinking water, making impurities sink to the bottom as sedimentary deposits. In the dim distance a rising fog haze makes its appearance—dust raised by thousands of cattle going to the river. I approach closer, and observe that in closely packed lines, head to tail, and led by an old bull, the column stretches out far beyond the shimmering horizon. Their tracks lay across that which I am traversing. The herd separates, and then, as I could only travel slowly owing to the softness of the ground, they start circling around and around me in hundreds. It is a common practice of bush cattle called "ringing"—and the unwary dingo is sometimes caught in one of these circles. With heads

stretched out, stiff tails twirling in the air, wild eyed, and emitting occasional bellows, they smother both the car and myself in a whirlwind of dust. I am glad that the beasts are not in close mob formation, as when thousands of them bolt as likely as not they will run towards the object of their fright. A "smash" is what the drover calls it. Many a cattle overlander has met his death as a result of these maddened charges. Galloping frantically ahead to try and turn, and also "steady," the animals his horse stumbles, or the rider's head strikes an overhanging limb of a tree. Then thousands of stampeding hoofs trample the remains to shreds.

The Longest Fence in the World.

Some miles further on, just around the end of a sand ridge, I see the Queensland border vermin wire-netted fences. These are built to keep out an invasion of millions of rabbits from South Australia. It is three thousand miles long, and extends from the east coast of Queensland and New South Wales, takes some zig-zag turns to the west and thence onwards for hundreds of miles, afterwards travelling due north to near the Gulf of Carpentaria. Along this trail, in dry seasons, emus, kangaroos, dingoes, brumbies and wild cattle, cut off from their old permanent water resorts, wander, often perishing, in great numbers. Their carcasses lie scattered over hundreds of miles of sun-scorched and grassless lands.

Boundary Riders.

Sand is continually drifting up and burying this fence, or strong winds blow away the surface, leaving the wire-strung posts and netting suspended in mid-air. Boundary riders, following their solitary existence, ride up and down, on bicycle, camel, horse or donkey, and are kept constantly on the alert. Further north, floodwaters sweep down, carrying away miles of this border line between Queensland and the Northern Territory. The results are not very serious, as rabbits have not penetrated the most northerly sections. Ticks are mostly responsible for this, as they kill off the young bunnies. Running alongside of this track, I espy, away in the distance, two long poles, which indicate the gate of the border. I go through the ceremony of crossing the boundary line, photographing the car with its front wheels

in Queensland and back wheels in South Australia. Around me, cows, each with about half a dozen calves, are patiently searching for herbage. One cow will take care of several calves, while the mothers are away on the twenty-mile walk to water. Oftentimes a little calf will jump unsteadily to its feet from a hollow in the ground where the mother has stowed it away, thus hiding it from the dingoes, which are continually prowling about. The mobs of cattle walking about destroy the trail of the wily mother. Adaptability to environment sharpens the spirit of altruism in uncongential surroundings, thus leading on to the perpetuation of the species on foreign soils.

I had been told that I would reach a road between the fence and the river, and I kept a keen lookout for buggy tracks which would probably indicate it. Eventually I came out on to a well-defined mail track. Running short of water, I cross this, and make straight for the river. Stopping the car on the edge of the steep, tree-clad banks, I scramble down and am met with an awful smell from green scum which covers the waterhole, and which proves to be vegetable oil from tree leaves, which have been snapped off by the myriads of white cockatoos and pink galahs. Studded thickly around the boggy margin are hundreds of carcasses of dead cattle. There are some in which life still lingers, and, as I look down, a dingo slinks away.

A Bath From a Rocky Bar.

Overhead on the tree tops cockatoos screech, and I hear them faintly above the roar of tens of thousands of flying wings as a big mob of galahs come in to drink. From a little rocky bar I dive in and take a bath, and also fill the billy-can with drinking water, which is always better away from the stagnant edges. As I swim back, a brown snake slithers into the water, a screaming frog in his mouth. I make some flour and water into little pats of dough and throw these on top of the red-hot coals. These are rivals of the bush damper and are called, amongst numerous other names, "Johnny cakes." A bottle of mosquito oil has been spilt all over my "tucker," and tea, sugar and flour are highly flavoured with it. The fishing line which I have set tugs viciously and then sweeps around in long curves—a catfish. This fish is edible, though its oily secretions

will make the consumer's flesh smell odoriferous for a few days. Late in the afternoon I retrace my wheel steps. Reaching the road, my faithful engine once more gets into her full stride, and roaring along we head up for Birdsville. Passing a deserted house on the edge of a cliff I kept the Diamantina River on my right. Some miles further on, over to my left, I see trees and water. I have crossed the river without knowing it. Burke and Wills did exactly the same thing, and I had frequently criticised their action in doing so.

The Edge of Beyond.

Gleaming patches of white floating on the skyline indicate Birdsville, famed amongst "Outbackers" as being on the "Edge of Nowhere." It is hundreds of miles from any other locality, but to me it is a civilised centre, to arrive at which I have long looked forward. I open up the throttle, and speeding along at thirty-five miles per hour, the little "bus" bounds into the main street. The local camp niggers have already spread the tidings, and all the several population have turned out to give me a hearty plainsman's welcome. In the general excitement "Wowser" hops overboard and, unnoticed, grabs an inquisitive and aggressive billy-goat by the ear. The clattering of hoofs and blood-curling bleats draw my attention to the comedy. Grabbing the bull-dog by the hind legs I corkscrew him around and around until it seems as though the twisting would pull Billy's ears out by the roots. A quieter and sadder goat disappears around the corner of the local "pub." The hotel waitress is carrying a pile of plates along the dining-room verandah when, seeing Wowser's ugly face she screams, drops the plates and scrambles hurriedly up a ladder which is leaning against the lamp-post outside of the bar. A good outback dinner awaits me, and needless to say I do full justice to it.

The Luxury of Bed.

I retire to rest in a neat, clean room. Most outback bedsteads are composed of bush-wood chassis, straps of greenhide, or fencing wire, interlaced to make a spring mattress. This was a real bed! Sleep-destroying mosquitoes sing their high-pitched songs. I rub whisky over my hands and face to drive them away, but this local breed evidently relish the spirit,

and become more daring than ever. Next door, on the other side of a very thin partition a drunken camel driver breaks forth into whistling snores. Outside, goats bleat whole-heartedly. From afar comes the strains of a cranky concertina, mingled with the tapping and thumping of dancing feet, sundry yells, and the fall of bottles! Then comes silence, and I pass into the Land of Nod.

Plague of Ants.

Leaving Birdsville two days later, I set out on the twelve hundred miles run to the Gulf of Carpentaria. The scrubby sand patches now gave way to open plains dotted with scraggy gum trees.

On the first night out my life was made miserable by thousands of black ants, which took possession of my blankets and filled my ears, nostrils, and mouth. My camp was crawling alive with the stinging, smelly things, and I spent a terrible night. Once I remember a big meteor flared suddenly across the sky, illuminating the heavens like tropic lightning.

The Great Divide.

Three days later I came out on to the red, stony, undulating plains of the Great Divide of Central and Western Queensland, which marks the northerly and southerly watershed. Here I sighted what appeared to be an enormous inland sea, but in reality was the flood waters of the Georgina River. On its rush-fringed margin thousands of black duck, teal and waterhens whistled and cackled. I shot a few, and roasting them on the hot coals carried them on the car for my meat rations. I found it quite impossible to cross the river here and, therefore, headed away inland over the big sand ridges and cracked black-soil flood country.

A Graveyard Silence.

A terrible fit of depression now overcame me. I felt weary with my two thousand miles of battling, and in the deathly stillness I seemed to be the only human being left on the planet. To make matters worse, my whole body ached with fever, and I seemed to be divided into separate personalities—one physical, the other mental—each one continually disagreeing and arguing with the other. In this semi-

mad state disaster was imminent, as it only required one miscalculation as to speed or locality and the relentless jaws of the Never-Never would close round me for ever. Dimly realising this fact, I camped early that afternoon, selecting a spot in the shade of an eighteen-foot breakaway cliff on the edge of a barren and dusty salt-pan.

All that night I lay in a kind of waking stupor, occasionally taking a long drink from my waterbag. Fortunately all my canteens were full. Just about daybreak, in the cold, chill dawn, the touch of fever left me, but I remained weak as from a long illness. My brain was wonderfully clear nevertheless, and it seemed that I could have unravelled the most intricate problems of the universe with ease.

I Meet With an Accident.

I was determined to push on, and with the sun just peeping over the horizon, I threw my blankets on to the car, started the engine with a lucky half-turn, and staggered aboard. The rushing fresh air acted as a tonic, and I soon felt slightly refreshed. Speeding along at about twelve miles an hour through tussocky bushes and over soft ground the car struck a "submerged" rock. The sudden impact drove my nose into the steering wheel, and blinded with pain and the blood which flowed freely, I lost consciousness. I came to myself about midday to find my shirt, trousers and hands soaked with blood. My nose was broken and flattened into my face, and I painfully pulled and kneaded the gristly fracture, until I got it somewhere near straight again. My reflected image showed that both my eye sockets were of a beautiful purple hue, and I could scarcely see out of them. Painfully I set to work to estimate the extent of damage which the car had suffered. The front axle was badly bent, the radius rods were doubled up, and some of the copper pipes of the radiator had sprung a leak, and all the water leaked out. That, however, was the extent of the injuries, and the engine started alright. I struggled on in my half-dazed condition, but soon struck another rock and buried my nose again into the steering wheel. Fortunately I got the clutch out in time to avoid stopping the engine or doing more damage to the undergear. Steering a crazy, zig-zag course I came across some firewood, which

I required in order to heat the axle so that I might straighten it. A half-rotten log lying amongst the salt bushes, through which I passed, supplied this need, and all that afternoon I toiled, jacking up the front of the car on to petrol cases and disconnecting bolts, nuts and rods. Heating the centre of the front axle I laid this out on hard ground, and with my heavy boots on, jumped several times on its centre, making a very good repair. My head throbbed with pain, and I was weak through want of food, having eaten nothing for two days. Night found the repairs effected, and I turned in under the car and quickly fell asleep in spite of the throbbing pain from which I was suffering through the injuries to my face. Next morning I was up early, ready to resume my journey. Over the dusty, volcanic ridges the car slowly wheezed its way on low gear, the high gear being impossible even on the downward gradients. The water was still dripping out of the radiator piping, where I had made a surgical operation by cutting the fractured parts, clipping over the ends, and then squeezing together with the pliers.

Sunset in the Desert.

All that day I continued my slow progress, and the setting sun found me only a few miles further on my journey. What a wonderful sight it is—a sunset in the desert—surely one of Nature's most beautiful phenomena! Colours blend into each other as in a rainbow, only they are so much more real, and so much less ephemeral. Dark blue blends to green, green gives to orange, orange to purple, and through the purple the setting sun, magnified by the alkali dust suspended in the atmosphere, glows like a smouldering, gigantic blood-red ball of fire. As I make my camp that night, a cold, clammy breeze springs up, which feels as if it might be blowing through some vault of the dead. I wash my face and arms in the hot water from the radiator, and try to feel cheerful over my supper of damper and tea. Afterwards I hollow out a recess in a sand-drift, spread my blankets there and, with "Wowser" reposing at my feet, sleep soundly in spite of the deadly stillness. I say in spite of the stillness, because it is the kind that is more disturbing than noise. No one who has not been out into these vast waterless regions can imagine the weird and

haunting silence which oftentimes reigns there. There is not even the happy chirp of the ground cricket, or the restless swaying of the grasses to disturb the quietness. Not the slightest sound greets one's straining ears. This is the kind of unseen thing that before to-day has driven exhausted men to madness.

The Edge of an Ancient Sea.

Next morning, under the driver's seat, I found the squashed remains of my cold roast duck and ate a little for breakfast. Big, truculent dingoes were wandering about, or sleeping in little caverns on the breakaway cliffs along the edges of what had at one time been an inland sea. They evidently got their water supply from some vegetable source, as I know that in southern desert lands there is a plant called "parakeelya," or variations of the same name. It is of the "roley-poley" species, and it is also sometimes classed as "pig-weed." Water had to be squeezed out of the fat leaves, but it is very brackish to the taste, and I am doubtful if it would sustain human life. For twenty miles the car struggled along on low gear, the going gradually becoming worse. Big cracks in the ground, some nine inches wide and fifteen feet deep, made travelling difficult. Down into these the front wheels would flop, while the back wheels skidded helplessly. With jack and shovel, under a blazing hot sun, I would release the wheels, only to repeat the process in a few minutes. Two days of this followed. Often I would reverse back a few yards over the wheel tracks to get a better swing. I felt my strength gradually going and, worst of all, my water supply was giving out.

HAWAII THROWS OUT HORSES FOR AUTOS

In Hawaii, the land of the ukulele, the well-known horse has practically been entirely displaced by the motor car.

"The displacement of the horse by the automobile in Hawaii has gone forward to an astonishing degree," states Max Arnold, Columbia distributor, who was visited recently by a touring party just returned from Uncle Sam's Pacific possessions. "Thousands of passenger cars, trucks and tractors are now in service in these islands

The nearest water was the Georgina River, away to the west, but how far I did not know. The travelling became heavier still, and finally dumping all my kit overboard, keeping only the bicycle (as lifeboat) and some food, I raced the engine and let the clutch in slowly and gently. The wheels still kept locked down into the crevices. So I jacked up again, putting the remains of the benzine cases underneath the tyres. Floating indistinctly on the horizon was a mirage of sand hills, and to this I directed my course backwards, the car bumping along at three miles per hour, and the engine racing as though the heart would come out of it. Then overheating caused another stoppage, and I went forward again along my tracks, only to go backward once more. Thus I obtained the necessary momentum to force a passage through the big cracks in the barren soil. The deadly thirst was consuming me, and I began to realise that I was trapped. "Wowser" was panting and whining on the seat beside me. A flock of wild fowls crossed overhead, winging their way westward to water—the only possession of any value in the world, so it seemed to me at the time. Another stop, and I tore the woodwork off the platform, placed this on the ground and ran the car on this for a few yards. Then she picked up speed, and ploughed a track for a few miles more. It was the last spurt. Suddenly there was an awful rattle and knocking from the engine. I shut off the throttle—she backfired several times, and then—silence. I was stranded in the desert without water.

(In next issue Francis Birtles will tell of the dreadful hardships he endured in his "walk for life" in search of water.—Ed.)

and the horse has been relegated to the 'has been' class forever, it seems.

"On the big sugar and pineapple plantations the work is almost exclusively done by tractors and motor-driven ploughs. This innovation has reduced operating expenses considerably, at the same time accomplishing increased and more satisfactory work. Several of the plantations are now manufacturing their own motor fuel.

DEFENDING AUSTRALIA'S HEALTH

FIGHTING DISEASE WITH GERMS

By CHARLES E. TAYLOR.

The outbreak of bubonic plague which occurred in Queensland a few weeks ago, and later spread to New South Wales, naturally directs attention to the efforts which the Commonwealth Health authorities are making in the direction of safeguarding Australia's health. In the following interesting article readers will learn much that was hitherto unknown to the outside world of the work which is going on continuously in our medical laboratories, with the object of keeping abreast of what science is doing in other countries to combat disease.—Ed.

IN the manufacture of sera with which to combat all sorts of epidemics the Commonwealth of Australia need not go outside its own doors. In this land of sunshine, with less than six millions of

The Institutes of Preventive Medicines throughout the world exercise two distinct functions. They produce sera and other bacteriological products known to be of value in public health, and medicine



Dr. J. H. L. Cumpston,
Director-General of Health for the Commonwealth of Australia.



Dr. W. J. Penfold,
Director of Laboratory Services, Commonwealth Health Department.

people over its three million square miles, there has been established one of the most complete serum laboratories in the world. It does not compare with the great English and American institutions for size, but in usefulness it carries out its work equal to most and better than many.

for the supply of the areas in which they are situated, or in which they operate commercially. They carry on research on the subject of disease generally, investigating its causation, limiting its incidence, and lowering its mortality.

To perform these two important func-

tions had long been the dream of Dr. J. H. L. Cumpston, who under the misleading title of Director of Federal Quarantine Services was charged with the preservation of the health of the community. Throughout Australia public health matters are looked upon as the concerns of the various States, and it has been Dr. Cumpston's aim to secure some measure of uniformity. Obviously this was necessary. It had been proved so time and time again. But the States are very jealous of their rights and privileges. Eventually, however, Dr. Cumpston gained his first point, and he is now the Director General of Health for Australia.

He had propounded a scheme for the establishment of a serum laboratory from which the States could draw their sup-

manufacture of therapeutic sera was realised.

The scheme originally propounded by Dr. Cumpston was adopted, and the appointment of a director was sanctioned. The whole world was combed for the right man for the position, and Dr. W. J. Penfold, M.B., B.Hy., was taken from his research work at the Lister Institute Laboratory at Elstree, England. As all the world is ready to admit, the Lister Institute Laboratory is one of the most modern in staff and equipment. It carries on work that is highly technical and marvellously scientific. It was here that this North of England man, with his Scotch shrewdness and Saxon calm, built up for himself a wide reputation for the originality and success of his research



Commonwealth Serum Laboratory at Royal Park, Victoria.

plies in times of national emergency. The Government for a while was afraid of the cost, and it was not until the war came that the matter had to be taken up seriously. Supplies of sera and anti-toxins were immediately diverted from Australia to other countries where they were more urgently needed. That left the Commonwealth in a perilous position. The whole country was at the mercy of any stray plague that might have dropped in. Hospitals were gradually running short of supplies, but the Government was slow to listen to the advice of its executive in health matters. Eventually, largely as the result of pressure from the Victorian Hospital Supplies Board, headed by the Ven. Archdeacon Hughes, the national necessity of undertaking the local

work. He had spent a number of years at the Lister Institute, and Australia was fortunate in being able to induce him to enter upon a new field. He was authorised to visit the largest and most modern serum laboratories in the world, see them at work, note their appliances, and prepare himself for the establishment of one as good, if not better, than the best. Dr. Penfold visited all parts of England, France and America, and the knowledge he derived from those visits was of the greatest assistance to him when he reached Australia.

Built upon an undulating site at Royal Park, the Commonwealth Serum Institute is within easy distance of Melbourne, the temporary seat of national government. It is close to the University, and its 25

acres of land permits the officials to observe the privacy which the nature of their work makes desirable. There was an idea at one time of constructing the buildings at Canberra—which, it might be mentioned in parentheses, is some day to be the Federal Capital—but they would have been away from the instrument makers and the source of labor supply, and these were considered fatal objections. In the building the idea was to concentrate as many of the laboratories as possible, and only for the manu-

dry sterilised and stored until required in the bottling room. On the second floor is a large lecture hall, as well as a kitchen and tea rooms. The ground floor of the south wing is given over entirely to the serum department, and the first floor is occupied by the vaccine, biochemical, and tuberculin departments. In the basement are the engine and store rooms.

A visit to the institution gives the layman the impression of something wonderfully efficient and fearfully scientific.



Testing the reaction of the culture media. (Note the guinea pig on the scales.)

facture of tetanus toxin and plague vaccine and for the examination of plague infected material are detached laboratories in use.

The main building consists of a central block and a south wing. On the ground floor are found the commercial offices, the medium department, and the packing rooms. On the first floor are the library, the Director's laboratory, the assistant bacteriologist's laboratory, the diagnosis laboratory, and a small room where the ampoules, as received from abroad, are

There is a bewildering sense of power in the millions of glass bottles and tubes of grotesque design. In the darkened cupboards are bottles filled with concentrated germs—enough to destroy the whole population of Australia. What if one were to break? It is not a pleasant thought, but one forgets the ever-present danger as his interest is aroused in the processes of manufacture of vaccines and sera.

The preparation of serum is best illustrated in the case of diphtheria, using

the horse as a medium. When the bacillus is taken from a patient it is "grown" with specially prepared broth. This creates a scum on the surface, which excretes the toxin into the fluid beneath it. The broth is then filtered free from bacteria. The filtrate is injected into the horse's shoulder in small doses, gradually increasing to one or two pints. After about two months of this treatment the serum is taken from the horse. One-fifth of a drop of this serum will neutral-

per cent. This was a triumph for the products of the Commonwealth Laboratory. There are hundreds of boxes of vaccine kept ready in this institution for just such epidemics as smallpox, influenza, and whooping cough.

There are nearly 50 horses at the laboratory, and their part is to supply the blood which, charged with bacillus, is returned to their bodies in a series of treatments. They are not of the usual broken down cab-horse type that generally



Bleeding a horse for anti-toxin.

ise one hundred fatal doses of the diphtheria toxin for a guinea pig.

In a similar manner are prepared the sera used in cases of meningitis, whooping cough, tetanus, septicæmia, and many other diseases. When Australia was in the grip of influenza all these vaccines and sera proved their worth. Of 4,000 patients suffering from influenza in the Melbourne Hospital only 3 per cent. who were inoculated died, while the death rate of patients not inoculated was 10

ends its days at the veterinary hospital. They are all fine, upstanding animals, mostly rejected by the military authorities because of some bone defect that makes them unsuitable as remounts. Some of these horses have been found to be untameable. And it is among them that occasionally one sees the humorous side of laboratory life. It is a fixed principle at Royal Park that everything must be obtained at least cost. This has led Dr. Penfold to devise a method of returning



Testing the potency of anti-toxin on a guinea pig.

to the horses the blood cells after the serum has been removed instead of throwing them away. Thus the animals are tapped much more frequently and for a larger quantity of blood. It is not uncommon to take 14½ pints at one operation. When the blood cells are returned to the horses they sometimes hold a little circus on their own account. They cut all sorts of capers, and care has to be taken that in their intoxication they do not injure one another.

There is also in the enclosure an animal house with accommodation for over 1,000 guinea pigs, 200 rabbits, and 36 monkeys. The monkeys do not take their injections very kindly, and the woe-begone expressions of some of them after several inoculations are highly diverting. The guinea pigs are invaluable for the production of diphtheria toxin, and as they are very prolific the institution has a never-ending source of supply.

The Commonwealth Serum Laboratory

is not a commercial concern, yet it is not conducted at a loss. In all cases the vaccines and sera are sold at prices that cover working costs. Therefore the people of Australia are obtaining a service which in other countries costs a good deal of money. An important side of the work that claims daily attention from Dr. Penfold is the training of a staff of scientists who will in years to come be of the highest value not only to Australia but to the whole world. They are learning the most up-to-date methods it is possible to teach, and by the use of what is perhaps the most complete bacteriological library in the Southern Hemisphere they are able to keep abreast of the times. In addition this great library is available to the medical profession of the Commonwealth. Later on the latest medical practices, exact methods of diagnosis and the proper facilities for diagnosis will be made available to the general practitioner in all parts of the country.

INDUSTRIAL ORGANISATION

By FREDERICK W. LARKINS, A.I.I.A., A.C.I.S., Dip.Ec.

INDUSTRIAL organisation is capable of being defined in many different terms. "A systematic union for some end or aim," is a simple dictionary definition. "The distinct laying out of the scope and limits of action, and the relations to each other of departments and officials along such lines as will secure greater efficiency and economy," is the definition of a noted industrial engineer. It has also been set out as "the division of work to be done into defined tasks, and the assignment of such tasks to individuals qualified by training and natural aptitudes for their efficient accomplishment."

Breaking up these definitions into elements it will be seen that the aims of organisation are:

- (1) To unite systematically a body of individuals for the purpose of working towards some common end.
- (2) To define the duties, responsibilities, authority and inter-relation of these individuals.
- (3) To unite the divisions and departments of a business into reciprocal relations and duties.
- (4) To bring individuals into systematic co-operation as a whole.

It is evident that organisation is chiefly concerned with the structural aspects of business units, the mechanism to facilitate the function of operation in relation to business enterprise. It much resembles a machine in being made up of assemblies and sub-assemblies, all planned to co-ordinate as a working model. Good planning must be supported by inspiring leadership in order to be successful in operation.

Many a business is merely a collection of departments, because, while possessing the mechanical make-up of an organisation, its members have not the spirit of working towards a common end. Unconsciously they fail to co-operate, pitting their departmental interests against the aims of the business as a unit; testing their inexperience against the knowledge of the trained man and overlapping in many of their functions. The resultant effect is—unbalanced departments, divisions of the business actuated by different motives and energies consumed in internal dissension, all of which is poor business, tending to

prove the assertion that "you cannot make more profits than your organisation will let you." The defect cannot always be laid at the door of the employees, it is sometimes the employer's defection in not training the personnel.

The perfect organisation is that of Nature. The thousands of activities that take place daily in the human organisms are but manifestations of that perfection. The component parts of the body are of the finest design; the functions and their relations are co-ordinated more smoothly than we will ever be able to arrange human relations. Consequently, the best types of industrial organisations are those modelled upon the body with the functions corresponding to the voluntary and involuntary organs, the five senses and the brain.

Organisation is the basic foundation in the varied phases of society, as represented by Government, Law, Army, Navy, the Church, etc.

Organisation has two distinct forms, viz., the corporate or legal form, which may be proprietary, partnership, or limited liability company; and the industrial or internal organisation, primarily concerned with the determining of its policies, the making of its plans, and the means whereby they may be put into operation. It is of the latter that we are now concerned.

That our forebears in industry used certain principles of business conduct akin to those operative to-day is of course true, but those they exercised were fragmentary and disconnected, and consequently unscientific. Where an enterprise was small and the proprietor in close touch with the employees by reason of their limited number, the call for organisation was not insistent. A decade or two ago the idea of science in business was scoffed at. Men boasted of being practical and of being able to do every task themselves.

The essentials of the scientific method consists of observation, analysis, definition, classification, inference and verification, plus the deductive method of logic, that is, of applying general laws or principles to particular problems. In order to thoroughly comprehend principles, one must be able

to see their application. The greater the intelligence and experience a man has, the better able will he be to apply, and thus to master, principles in their business significance.

Industry, as we know it, is of comparatively recent growth. From the English Industrial Revolution, marking the beginning of the factory system, to the present is but a span of one hundred and thirty years. Yet what progress has been recorded in the field of mechanical and scientific invention and discovery! The impetus given industry by the great inventions of the spinning and weaving machine; the application of steam as a power force, with its effect upon production and transportation; together with the development of coal, iron, and steel, have been closely followed by other inventions so numerous and revolutionary as to make the nineteenth century paramount in respect of man's subjugation of natural forces.

The marvellous growth in the world's commerce and industry during the last century may be attributed to the following causes:

- (1) Discovery and operation of new sources of raw material.
- (2) Improved methods of processing raw material.
- (3) Improvements in transport and communication.
- (4) Expansion of motive power.
- (5) More efficient organisation of commerce, industry and government.
- (6) The development of advertising and opening up of world markets.

This material progress—indicating the success of the scientist, the discoverer and inventor—has been at the expense of the development of the science of organisation and administration insofar as regards the study of the human relations involved, the co-ordination of the activities of the different divisions of a business and the building up of an efficient practice of administration methods and procedure in a business, and reducing to a minimum the friction and cross purposes inseparable from group action.

The joint stock company, or corporate form of enterprise, with its thousands of employees, has evolved as the best form of conducting business on a large scale, and has created the need of such a science. Business is too big, interests too varied, responsibility too great to carry on enterprises on sole proprietary methods. The

company or corporation signifies the resources, the brains and the work of many men merged for one purpose in a business unit. Diffused, and one might say democratic, ownership with concentrated control is the distinctive feature of the company.

Just as the complex large scale business is chiefly responsible for the development of the executive type of business man, so also has it brought into greater prominence the need for planned organisation as against a business built upon the policy of expediency and opportunism, if, indeed, such can be termed a policy. As executive ability represents the expression of individual effort through collective or group action, so also does organisation represent the division, grading, and placing of tasks upon those best able to execute them. It permits men to achieve ends by collective means, impossible of performance by individual effort. In its policy of equality of opportunity to ability it approaches modern concepts of democracy.

Carnegie is reputed to have once said: "Take away all our factories, our trades, our avenues of transportation, our money, but leave me our organisation, and in four years I will have re-established myself." To him a picked and trained personnel was a greater factor in successful business enterprise than capital.

The activities in any business can be primarily classified into three divisions, viz., Finance, Production, Sales, and into subdivisions dependent on the needs and stage of development of the plant.

In planning an organisation, four definite and fundamental considerations should be paramount, viz., its relationship to—

- (1) The product manufactured.
- (2) The various kinds of authorities that are required to control the activities of the business.
- (3) The accounting methods that must be installed in order to control the personnel and production.
- (4) The personnel that must be controlled in its relation to expenditure.

The one great study is to ascertain what units of organisation will be required and then divide them into departments according to the various kinds of experience that may be required for handling the work coming under each.

The tendency in advanced business in England and America during the last ten

years has been the study and practice of intensive cultivation in regard to the inner workings of business, with the aim of increasing production and eliminating waste both in equipment, material and labour. The vast natural resources of America are not quite as vast as during the last century, while the expense and risks of exploitation, the stress of competition and the cost of labour tend to diminish the profitableness of newer developments of resources. Limited in their output by competitive markets, many firms have been forced to study and install more economical methods of production, recording and distribution as the only method of increasing sales by means of decreased costs and prices.

As a result, the present-day tendency is to subject every phase of business operations to the processes of observation, analysis and synthesis—which may be termed the

essence of the scientific spirit—with a view to possible economies in operations.

Organisation being but the enlargement of the powers of self, after a certain stage of business progress has been reached, further expansion is only possible by the executive being able to duplicate or enlarge his business capacity through collective effort.

The limit of personal capacity is always present in the average business man, and can only be overcome by certain well defined methods of planning and performance, giving centralised control, with decentralised action, and reducing processes to routine procedure, thus enabling specialised treatment of definite functions, and allowing more latitude to the management to concentrate on the newer problems of administration and expansion that arise daily.

WORDS OF WISDOM

You will find a tremendous help in constantly affirming that you are the person you wish to be; not that you hope to be, but that you actually are now. You will be surprised to see how quickly the part which you assume will be realised in your life; will be revealed in your character.

* * *

We rob ourselves of more than we can ever compute by being niggardly in the matter of a vacation. Economise on anything else rather than this, on which the very wellspring of being depends. Health is the "pearl of great price" for which, if need be, we should be willing to exchange all our possessions. Without it all other things are powerless to make us happy. Many a millionaire who has bartered his health for his millions sighs for what all his wealth cannot restore.

* * *

There are people who make no mistakes because they never wish to do anything worth doing.

"Our anxieties are mostly artificial and are bred indoors under the stifling oppression of walls and roofs—and a day in the open will often dispel them like a bad dream."

* * *

There is no advertisement for a business house like having its men go around bragging because they are working for it.

* * *

To-day's the day, this hour is the hour, now is the minute—it's the Code of Accomplishment.

* * *

Freedom is essential to achievement. No one can do his greatest work when his mind is cramped with worry, anxiety, fear, or uncertainty, any more than he can do his best physical work with his body in a cramped position. Absolute freedom is imperative for the best brain work. Uncertainty and doubt are great enemies of that concentration which is the secret of all effectiveness.

FLY-WAYS AND HIGHWAYS

By ERNEST McGAFFEY

IN Southern California, particularly around the cities of Los Angeles and San Diego, the skies are dotted with the wings of aeroplanes, and the roadways of the air are being travelled in all directions. More and more interest is being taken in the commercial possibilities of modern airships, and the amount of experimenting, building, investigating and demonstrating which is going on is decidedly impressive. The question of aerial service in passenger and freight transportation is being figured out on a strictly business basis, and huge sums of money are being invested in the construction and the perfecting of air-navigating carriers.

Close students of history recall the rise and fall of the steamboat, which in its zenith of power played so important a part in the carrying of freight and produce of all kinds, as well as the transportation of millions of passengers annually. But this factor of common carriage faded like "the snows of yester-year," being supplanted by the railways. The principle of steam railway transportation reigned supreme for many years in commercial channels, and even waxed rather arrogant in its assumption of dominance.

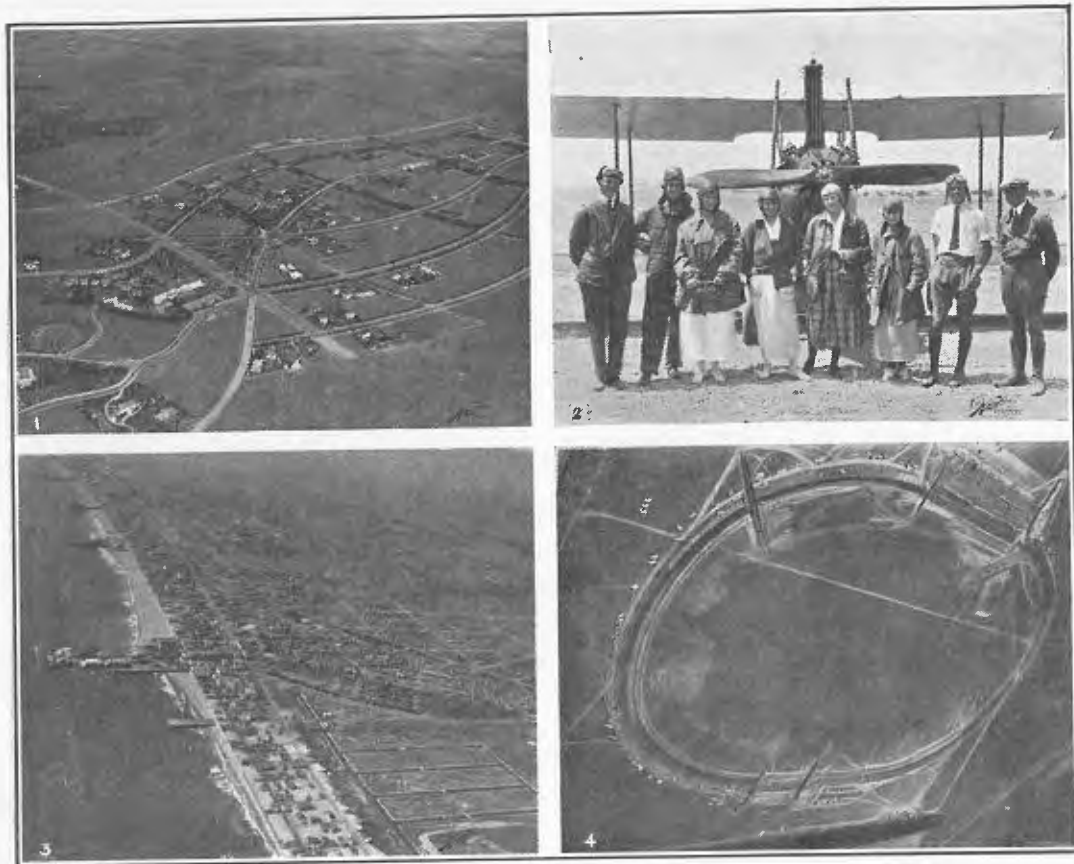
But the invention of the motor car and the motor truck, although laughed at as a fad in the beginning, began steadily but surely to usurp the function of the railways as a common carrier in America, and together they are now recognised as a formidable rival for this business in every State of the Union. Modern highways, automobile truck lines, motor stage lines, automobiles and automobile "trailers" have made freight and passenger transportation very popular in the United States at distances of from fifty to five hundred miles and even further, and the amount of business done in this way mounts up into millions of tons of freight, and millions of passengers carried each year. But a little rift in the lute of motor supremacy has begun to appear in the shape of commercial "fly-ways," traversed by aeroplanes, and this rift is gradually widening. The aeroplane needs no highway to demonstrate its efficiency. Like the sailing ship, or steam-

ship, nature has provided its highway. The problems of track laying, track repairing, track inspection, or the maintenance of right-of-ways or highways, the delays occasioned by this work and the laying out of detours during the course of repairs are matters of no concern to the airmen. The wide thoroughfares of Creation are unswept save by the winds, and the wings of wandering wild-fowl, and untended unless by the mists and clouds; and whether mariner or aeroplanist, they are free and uncharted.

The wonderful aeroplane journey from England to Australia by the two intrepid Australians, Sir Ross and Sir Keith Smith, and their two companions, the greatest single feat ever performed by the bird-men, demonstrated in a manner, little short of miraculous, the possibilities of modern engine-power in long-distance aerial journeys from continent to continent. In the United States, ocean-to-ocean flights from the Atlantic to the Pacific have been made frequently, with a few stops, and the ambition of all the Pacific coast birdmen is to make a non-stop flight from that coast to the seaboard cities on the Atlantic Ocean. While this has not yet been accomplished, it has been attempted on several occasions and will ultimately, without doubt, be covered by one of America's airmen. The longest non-stop flight inland in America so far has been approximately one thousand one hundred miles.

Of course in the United States there is a great deal of interest manifested in the question of aeroplanes and of seaplanes for defensive and offensive purposes. The experiments of the United States Government with bombing 'planes on anchored vessels to determine the effectiveness of the bomb-plane as a method of destroying battleships, has been extensive, and costly, too; but there is no general consent as to their absolute success. Nevertheless, with the hinted existence of super-deadly gas bombs, which are claimed to be available, there is no actual basis on which to figure possibilities.

Naturally enough, the automobile and the modern-paved highway have taken a



Fly-ways of Southern California.

(1) Beverly Hills from an aeroplane; this is just outside Los Angeles. (2) At Mercury Field, near Los Angeles; passengers ready for a flight. (3) Aerial view of Venice, Santa Monica, and Ocean Park, California. (4) Los Angeles motor speedway, under construction, as seen from the air.

prominent part in the development of the aeroplane and the seaplane. The transportation of aeroplane building material of all kinds to the factories by automobile trucks, the use of automobiles to transport the "bird-men" and judges to the flying contests and demonstrations, coupled with its comprehensive highway system, has made Southern California, with its practically all-year open climate, an ideal region both to build and fly aeroplanes and seaplanes. The Automobile Club of Southern California has so thoroughly sign-posted the highways that even strangers in Los Angeles and San Diego Counties, as well as in all of the southern counties, have no difficulty in reaching the flying fields and aviation centres.

A number of hangars and aeroplane stations are maintained solely to furnish

pleasure flights to adventurous spirits, and aeroplane sky-parties are quite a fashionable recreation at various resorts. Aeroplanes are used extensively in Southern California by the United States Forestry Service to detect the presence of forest fires, and they are also used largely in photographic views of all sorts, many of these being of particularly striking effectiveness. But to the keen student possessed of vision and imagination, all this is but a preliminary to what the future holds for aircraft. Mail routes, express routes, passenger and freight transportation are all potential possibilities for the utilisation of air machines in the coming years. Mail services have already been inaugurated, the route from New York to Chicago being the most conspicuous example of this branch of aerial activity.

Southern California capital has been heavily invested in aeroplane building, and firms here in Los Angeles are constructing both aeroplanes and seaplanes for commercial, defensive, and offensive use in military operations. The advances in aircraft construction have been many and important since the first airships made their appearance. Gradually, but inevitably, inventive genius is overcoming the initial difficulties experienced in building the 'planes strong enough to carry a considerable tankage of fuel for long flights, and make them more certain of control by the pilots. Of course the risks in handling the big ships are not yet entirely eliminated, but modern science is addressing itself resolutely to the task of bringing the

'planes to the highest degree of safety and efficiency possible.

The evolution of flight has always had an absorbing fascination. Perfected, it may mean the solving of the hitherto unsolvable mysteries of the North and South Poles, aside from its other achievements. As it now stands, it bids fair to usher in a marvellous revolution on modern life and commerce, as well as to make warfare a matter of battling air-navies, as propheesied long ago in Tennyson's "Locksley Hall." When aeroplanes have been developed from their present rather embryonic stage to their full stature as a world-force in both war and peace, the highways of the various continents may be overshadowed, or even superseded by the "fly-ways."

RAISING ALLIED VESSELS

BIG MAGNET MAY BE USED

FISHING with submarine magnets for Allied ships which strew the bottom of the North Sea and the English Channel may be attempted on a large scale in the near future if an invention recently placed at the disposal of the British Admiralty proves to be practicable in deep-sea salvage operations. It is believed that the device may recover much of the loss in steel and metals caused by the submarines. It is also probable that it may, to some extent, replace the deep-sea diver.

The "submarine electro-magnet" is octagonal in shape, three feet in width between the opposite sides, two and a half inches in depth, weighs seven hundred-weight, and is strong enough to lift sixteen tons of metal. In salvage work three magnets will be employed simultaneously, in order to get a good hold on the larger sections of armour plate.

Gigantic searchlights will first be turned on the wreck, and after the vessel has been blown to pieces by explosives the magnets will go down to search for anchors, chain cables and pieces of metal. The power will be sufficient to raise all fragments of metal, even though they be encased in wood.

The mechanical diver's possibilities were demonstrated recently at an exhibition at the Albert Docks, Silvertown, attended by representatives of the British Admiralty, the Port of London Authority and the sal-

vage and shipbuilding companies. Into thirty-six feet of water were thrown several steel girders weighing two tons, some cast-iron cylinders, castings, a section of railway switch and other metallic objects.

Swung by a crane, the magnet dived and, to the amazement of the witnesses, came up with the steel girders glued to its under side. The operation was repeated until the last piece of metal had been raised.

At one stage in the demonstration there was lively competition between a human diver and the diving magnet. The steel railway switch, owing to its peculiar shape, could not be located until a diver had gone down and placed the magnet in contact with the rails.

"The magnet is not intended to supplant divers," said Mr. Neale, head of the Neale Magnet Construction Company, in charge of the development of the invention. "It will be of value chiefly in cases of wrecks in deep water, or silted up, where divers cannot go.

"It will also be used for loading and unloading vessels, discharging metallic ores, lifting machinery and loading steel sections from rolling mills. A current of sixteen amperes, at a pressure of two hundred and twenty volts, supplies the power."

GOLD ROBBERIES ON THE AUSTRALIAN COAST

STORIES OF DARING EXPLOITS

By FRANK REID

UNTIL quite recently our newspapers announced several times in each year the departure to England or San Francisco of vessels carrying hundreds of thousands of pounds value in gold. As much as three millions sterling were sometimes carried away from the Australian coast in a few months. In 1896 the three colonies of Queensland, New South Wales, and Victoria sent away £8,889,000. It was not a matter of surprise that such announcements excited the cupidity of a section of the community, or that from time to time attempts were made to surreptitiously lay hands on some portion of the seductive treasure. A century ago the means employed for the exploiting of a ship's valuables differed greatly from those in vogue now. Then pirates attacked the vessel on the high seas, and a battle royal determined the issue, or some of the ship's own men or officers conspired and fought the others for the booty. During recent years there has been none of this sensational bravery. Personal prowess of the demonstrative kind has not been seen, and the smoke and noise of war were wholly absent. Robbing a ship's safe on our coast has recently been conducted with the same silent and thoughtful deliberation as is the solving of a difficult chess problem.

The first thing the rifter set his heart upon was how to get the key. It is singular what negligence ship officers often display in regard to the custody of their keys. The theory, and indeed the general practice, is that the captain checks the boxes as they are stored in the bullion room, locks the door when the transaction is complete, and, sleeping and waking, carries the key in a leather pouch around his neck till he unlocks the door at the end of the voyage. But theory and practice are often set aside. In the *Tararua* case at Melbourne in 1880, when £5,000 worth of gold bars were stolen, the police discovered that two keys, either of which opened the bullion-room, used to hang against the wall in the public bar. It was also discovered that one of these keys mys-

teriously disappeared twelve months before the robbery, and that no serious investigation was then made into the loss, nor was any alteration made in the lock of the bullion-room. This *Tararua* was a Union Company's boat running between New Zealand and Australia, and had shipped boxes of gold at various ports. Altogether she was supposed to carry eleven boxes. On arriving at Melbourne it was found that one of these boxes, containing five bars, weighing 1,255 oz. 12 dwt. 12 gr., and valued at over £5,000, was missing. Examination showed that someone had simply opened the door with a key, extracted the box, and locked the door again. There was no clue as to when the deed was done. The fact that the twelve months' missing key had never been traced stood to the advantage of the criminal. The police record of the proceedings says: "So many persons had the opportunity to take this gold, owing to the carelessness of those who ought to have had charge of the keys of the gold-room, that we find it most difficult to fix suspicion more firmly upon one than another."

The robbery from the *Iberia*, which left Melbourne for London in March, 1889, is supposed to have been also effected by means of a key surreptitiously procured. In that case the purloined gold consisted of five thousand sovereigns, and the robbery was not discovered till the arrival of the vessel in London. The captain, second officer, and purser were called on to resign, not on account of suspicion resting on them, but because they could give no explanation of the robbery. The mystery was never fully cleared up, but events indicate that some of the sailors had a hand in the crime.

The robbery of £5,000 in gold ingots from the *Aredale* at the Nelson Wharf, New Zealand, about 1865, was undoubtedly the outcome of mislaid keys.

It often happens, particularly on our coast, that the captain has to add to his consignments at port after port, and thus necessarily locks and unlocks the bullion-room door many times. When it is dis-

covered at the London side that a robbery has taken place, the fact stated greatly extends the area of investigation. The surroundings on each occasion of locking and unlocking must be minutely examined, and all suspected persons carefully looked up and shadowed. Interested parties, or individuals with a taste for practical jokes, increase the difficulties of elucidation by showering the police with anonymous revelations as to the whereabouts of the missing treasure. At a critical stage of the *Tararua* investigations the detectives received a letter running thus: "... Bars. Search butcher's shop, ——— Street, Melbourne, also dwelling house for a prospect. Night." The butcher's shop and dwelling-house were duly raided at night, but no gold bars were forthcoming. Another anonymous letter ran: "What about ——— and a certain cabman? They know something of the *Tararua* gold." Here again the clue ended in nothing. Detectives wisely gave a certain amount of attention to anonymous letters; but there is no doubt that such letters are often written to throw justice off the scent.

The robbery from the *China* developed in a remarkable way. Here the Oriental Bank in Sydney placed the gold on board a coastal steamer called the *Avoca*. At Melbourne the gold was transhipped to the *China*. The *China* touched at Adelaide and other ports, but it was only at Galle the discovery of the robbery was made. Detectives operated on all the ports simultaneously, but nowhere could a clue be found. The amount missing was the usual £5,000. The P. & O. Company, to whom the *China* belonged, dismissed various officers, and after a time the subject dropped out of public talk. In 1878, however, a man named Weiberg, who had been carpenter on the *China*, took up a selection in the interior of Victoria. Before settling down he married a Melbourne barmaid, and appears to have confided to her some shady particulars of his past history. The Samson and Delilah story was in part repeated, and the police laid themselves out to watch Weiberg. The upshot was the arrest of the man as the safe-rifter of the *China*. In his effects lay ready proof of his guilt. One thousand sovereigns were found in a tin of fat stored away by him in Melbourne. In his hut was discovered a wooden plane stuffed with gold; the wood was hollowed out and the gold dropped in.

In the hut was also discovered a bar of soap containing two hundred sovereigns. A policeman happened to lift the soap, when its great weight arrested his attention. With an auger the soap had been drawn out and the sovereigns inserted in its stead. Weiberg was a man of resource who declined to accept defeat. He told the detectives that he had one thousand eight hundred sovereigns concealed on his selection, and offered, if they accompanied him, to point out the spot where the booty lay. As may be surmised, he fooled the police into a wild, thick-timbered region, took them suddenly off guard, and made his escape. He was recaptured, however, some months later, and after doing a term of hard labour was accidentally drowned in a Gippsland lake.

The mystery of the *Iberia* £5,000 was cleared up in a still more singular manner. Every attempt to trace the lost money failed, and the authorities ceased to think about it. One day two boys playing at Williamstown saw a mouse run into a hole under the platform of the railway pier. One of the boys started to dig the mouse out with a stick, and, to his surprise, unearthed a mass of sovereigns. The boys gathered up between them two thousand and eighty-two sovereigns, and hurried home to report their luck. The police were informed, and before the day was out three thousand seven hundred and forty-two sovereigns were recovered. This still left a balance, but neither balance nor robber has since turned up.

The recovery of the *Aredale* gold was more satisfactory, as far as amount is concerned. This robbery was, as has been said, effected by some one who made use of unguarded keys. It took place in the early sixties, and covered the usual £5,000, but in bars. For nearly two years the police laboured in vain. The mystery might never have been cleared up but for an accident. A wharf-lumper fishing at Nelson Pier, where the *Aredale* had been berthed, hooked on to something which excited his curiosity. Obtaining assistance, the lumper succeeded in bringing to the surface the missing box with its treasure intact. The robber had evidently sunk the box, intending to return for it when opportunity permitted.

In 1897 the *Oceana* lost £5,000 at or near Melbourne, but investigation has so far failed to unravel the mystery.

ROMANCE OF PAPER

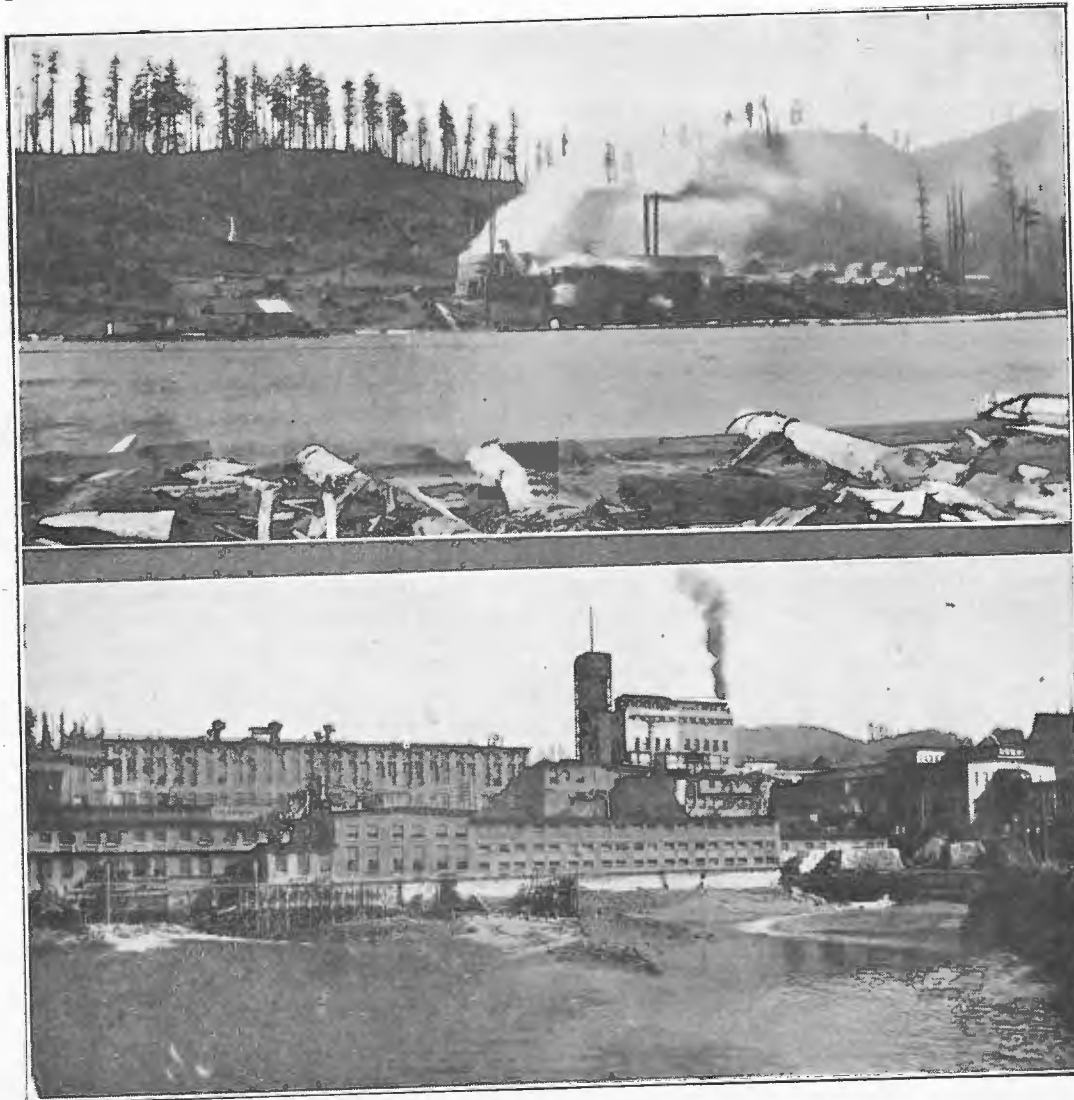
SCENE OF A GREAT ENTERPRISE

ON THE PICTURESQUE POWELL RIVER

By W. J. WASHBURN

A SHEET of paper! Nothing much, most people think; just a common, everyday necessity. Yet sometimes the so-called ordinary things of life spring from uncommon sources, and so it is with paper.

Much of our newsprint paper comes from Powell River, a picturesque town situated at the mouth of a river of the same name which empties into the beautiful Puget Sound, British Columbia. There are few more beautiful rivers to be found



Views of the paper mill on Powell River.

anywhere than this stream with its waters of crystal clearness which impel the visitor to linger by its side, drink of the refreshing liquid and bathe in its cool, inviting depths. The melted snows of Northern Canada act as a feeder to Powell River, and incidentally are responsible for the wonderful clarity of its waters.

Six million dollars have been sunk in the enterprise promoted by the Powell River Company, and it is satisfactory to know that the venture is proving a profitable one. King Spruce, the pine from which paper is made, is becoming scarcer and scarcer around the mill, necessitating the floating of logs from any distance up to three hundred miles.

Those who have witnessed a log camp will not readily forget the air of peace and contentment pervading the lives of the loggers and their families as they drift lazily down the sounds. The free, open-air existence amidst Nature's purest air and enchanting scenery leaves its impress in the shape of ruddy, glowing health upon the lives of those who regularly follow it.

Two or three hundred yards from its mouth a high-level weir crosses the river from which run three huge pipes with a down-grade of about one in four to the mill. This rush of water is ample to drive turbines of sufficient power to operate the mill, generate electricity and supply power for other purposes as required. The overflow from the weir forms a pretty waterfall.

The logs on entering the mill are handled by human-like machinery, the biggest logs

being tossed about like driftwood on the ocean, sawn up into blocks, pulped, chemically treated, pressed into sheets, rolled and labelled ready for shipment. This process is really wonderful, the pressing and rolling machines being masterpieces of accuracy.

The management and staff show the utmost courtesy to visitors and explain at length the workings of the mill.

Powell River township, owned by the Company, is built on approved American lines. The dwellings are neat, wooden structures, placed twenty or thirty feet from the side-walk, and each householder vies with his neighbour in the upkeep of his lawn and garden. The rental is very reasonable. Electricity, as much as they care to use, costs seventy-five cents per month and water is free. These homes contain all the latest electrical appliances, and the housewife's lot is by no means a hard one.

All the streets are tree-lined, each one having a particular class of tree planted along it, from which it derives its name—quite a pretty town-planning idea. This model township contains a modern department store, hotel, druggist, post office, and the inevitable picture house. An efficient mail and passenger service is maintained by steamers with Vancouver, B.C.

Launch picnics, fishing and football are the principal forms of recreation in this well regulated and orderly town, so little known beyond the shores of America.

THE WANDERLUST

By HARRY HOYT.

I hear the Wanderlust a' calling,
So I'll amble on my way.
There's little use to argue,
For the Voice will have its way.

It will lure me from the fireside
And the comfort of my home,
Into strange and foreign places
That my sight has not yet known.

It will take me from the darkness
Of Monotony's cold sway,
And will guide me to the sunshine
In some country far away.

And in that country lies a Romance
That my mind can clearly see,
Beckoning from out the distance
To my Wanderlust and me.

And I will find contentment,
In this new land for a while;
In the paleness of the moonlight
And the softness of a smile.

In the whispers of the night-wind,
In the swaying of the trees,
In the gladness of the sunshine,
And the humming of the bees.

And then! Pied Piper to my reason
Floats a voice across the lea,
Urging me to hunt still farther
For the sights that I may see.

So I'll chase another rainbow
In the hopes of what may be,
And go on and on forever—
Just my Wanderlust and me.

THE LAST ADVENTURE

By MELVILLE DAVISSON POST*

THE talk had run on treasure. I could not sleep and my friends had dropped in. I had the big south room on the second floor of the Hotel de Paris at Monte Carlo. It looks down on the Casino and the Mediterranean. Perhaps you know it. It's called the "fool room" because nobody but an American would pay the price for it.

Queer friends, you'd say. Every man, Jack of them a gambler. But when one begins to sit about all night with his eyes open, the devil's a friend.

Barelay was standing before the fire. The others had drifted out. He's a big man pitted with the smallpox. He made a gesture, flinging out his hand towards the door.

"That bunch thinks there's a curse on treasure. That's one of the oldest notions in the world. . . . It's unlucky.

"But I know where there's a treasure that's not unlucky. At least it was not unlucky for poor Charlie Tavor. He did not get it, but there was no curse on it that reached to him. It helped Charlie finish in style. He died like a lord in a big country house, with a formal garden and a line of lackeys."

Barelay paused.

"Queer chap, Tavor. He was the best all-round explorer in the world. I bar nobody. Charlie Tavor could take a nigger and cross the poisonous plateau south-west of the Libyan Desert. I've backed him. I know. But he had no business sense; anybody could fool him. He found the stock of bar silver on the west face of the Andes, that made old Nute Hardman a quarter of a million dollars, clear, after the cursed beast had split it a half-dozen ways with a crooked South American Government."

Barelay's teeth set and he jerked up his clenched hand.

"It was a theft—a piece of low-down robbery; and it was like taking candy away from a child. . . . 'Sign here, Mr. Tavor,' and Charlie would scrawl his name.

Some people think there's no hell, but I wonder what will happen to old Nute?" He flung out his hand again.

"Still the thing didn't dent Charlie. He never missed a step. 'Don't bother, Barclay, old man,' he'd say, 'I'll find something else.'

"And then he'd go off into this dream he had of coming back, when he'd struck it, to the old home county in England and laying it over the bunch that had called him no good. He never talked much, but I gathered that he was a black sheep in a smart flock.

"Then I'd stake him to a cheap outfit—not much; I've said he could push through the Libyan Desert with a nigger—and he'd drop out of the world. And it wasn't charity. I got my money's worth. The clay pots he brought me from the Yucatan would sell any day for more cash than I ever advanced him."

Barelay moved a little before the fire. I was listening in a big chair, my feet extended towards the hearth; a smoking jacket had replaced my dinner coat.

"It was five years ago, in London," Barclay went on, "that I fitted Charlie out for his last adventure. He wanted to land in the Gulf of Pechili and go into the great desert of the Shamo in Central Mongolia. You'll find the Shamo all dotted out on the maps; but it's faked dope. No white man knows anything about the Shamo.

"It's a trick to lay off these great waste areas and call them elevated plateaux or sunken plateaux. You can't go by the atlas. Where's Kane's Open Polar Sea and Morris K. Jessup's Land? . . . Still, Charlie thought the Shamo might be a low plain, and he thought he might find something in it. You see, the great gold caravans used to cross it, three thousand years ago; and, as Charlie kept saying, 'What's time in the Shamo?'

"Well, I bought him a kit of stuff, and he took a P. & O. through the Suez. I got

a long letter from Peking two months later; and then Charlie Tavor dropped out of the world. I went back to America. No word ever came from Charlie. I thought he was dead. I suppose a white man's life is about the cheapest thing there is north-west of the Yellow River; and Charlie never had an escort. A coolie and an old service pistol would foot up his defences.

"And there's every ghastly disease in Mongolia. . . . Still, some word always came from Tavor inside of a year; a tramp around the Horn would bring in a dirty note, written God knows where, and carried out to the ship by a naked native swimming with the thing in his teeth; or some little consulate would send it to me in a big official envelope stamped with enough red wax to make a saint's candle.

"But the luck failed this time. A year ran on, then two, then three, and I passed Charlie up. He'd surely 'gone West.'"

Barelay paused, thrust his hands into the pockets of his dinner jacket, and looked down at me.

"One night in New York there was a call for me from the City Hospital. The telephone message came in about ten o'clock, while I was in Albany. I found the message when I got back the following morning, and I went over to the hospital.

"The matron said that they had picked up a man on the North River docks in an epileptic fit and the only name they could find on him was my New York address. They thought he was going to die—he was cold and stiff for hours—and they had undertaken to reach me in order to identify him. But he did not die. He was up this morning and she would bring him in."

Barelay paused again.

"She brought in Charlie Tavor. . . . And I nearly screamed when I saw the man. He was dressed in one of those cheap hand-me-downs that the Germans used to sell in the tropics for one pound, three and six. His eyes looked as dead as glass and he was as white as plaster. How the man managed to keep on his feet, I don't know.

"I didn't stop for any explanation. I got Tavor into a taxi and over to my apartment."

Barelay moved in his position before the fire.

"But on the way over a thing happened that some little god played in for a joke.

There was a blockade just where Thirty-third comes into Fifth Avenue, and our taxi pulled up by a limousine."

Barelay suddenly thrust out his big pockmarked face.

"The thing couldn't have happened by itself. Some burlesque angel put it over when the Old Man wasn't looking. Spread out on the tapestry cushions of that limousine was Nute Hardman!"

"There they were, side by side, not six feet apart—Old Nute in a sable-lined coat and Charlie in his hand-me-down, at one pound, three and six."

The muscles in Barclay's big jaw tightened.

"Maybe there is a joker that runs the world, and maybe the devil runs it. Anyhow, it's a queer system. Here was Charlie Tavor, straight as a string, down and out. And there was Nute Hardman, so crooked that a fly couldn't light on him and stand level, with everything that money could buy.

"I cast it up while the taxi stood there beside the car. Nute was consul in a South American port that you couldn't find on the map. He didn't have two dollars to rub together, until Charlie Tavor turned up. There he sat, out of the world, forgotten, growing moss and getting ready to rot; and Fate, or whatever it is, steered Charlie Tavor in to him with the bar silver.

"He picked Charlie to the bone and cut for the States. And this crooked luck went right along with him. He was in a big apartment, now, up on Fifth Avenue and four-flushing toward every point of the compass. His last stunt was 'patron of science.' He'd gotten into the Geographical Society, and he was laying lines for the Royal Society in London. He had a Harvard don working over in the Metropolitan Library, building him a thesis!

"The thing made me ugly. I wanted to have a plain talk with the devil. He wasn't playing fair. Old Nute couldn't have been worth the whole run of us; I've legged some myself, and I had a right to be heard. The devil ought to make old Nute split up with Charlie. True, Charlie belonged in the other camp, but I didn't. And if I wanted a little favour I felt that the devil ought to come across with it. . . . I put it up to him, or down to him, as you'd say, while I sat there in that taxi."

* In *Hearst's International*.

There was a grim energy in Barclay's face. He was no ordinary person.

"I got Tavor up to my apartment, and a goblet of brandy in him. I never saw anybody look like Tavor as he sat there propped up in the chair with a lot of cushions around him. It was winter and cold. He had no clothes to speak of, but he did not seem to notice either the cold outside or the heat in the apartment—as though, somehow, he couldn't tell the difference.

"And he was the strangest colour that any human being ever was in the world. I've said that he looked like plaster; but he looked like a plaster man with a thin coat of tan-coloured paint on him."

Barclay paused.

"It's hardly a wonder that no message reached me. The devil couldn't have got word out of the hell land he'd been in. Lost is no name for it. He'd been all over the Shamo, and the big Sahara's a park to it. He'd been north to the Kangai where they used to get the gold that the caravans carried across the Shamo, and he'd followed the old trails south to the great wall. "It's all a Satan's country. I don't know why a hell-hole like the Shamo was ever made!"

He paused, then he went on.

"But it wasn't in the Shamo that Tavor got track of the thing he was after. He said that the age he was trying to get back into was much more remote than he imagined. It must have been a good many thousands of years ago. He couldn't tell; long before anything like dependable history, at any rate. . . . There must have been an immense age of great Oriental splendour in the south of Asia and along the East African coast, dying out at about the time our knowledge of human history begins."

Barclay went on, unmoving before the fire.

"I don't know why we imagine that the legend of a little tribe in Syria running back to the fifth or sixth century begins the world. . . . Anyway, Tavor got the notion, as I said, of an age in decay at about the time these legends start in—with a trade moving west.

"He nosed it all out! God knows how. Of course it was only a theory—only a notion, in fact. He hadn't anything to go on that I could see. But after two years'

drifting about in the Shamo, this is how he finally figured it:

"Northern Asia traded gold in the west; the mined product would be moulded into bricks in lower Mongolia. It was then carried overland to the south-west coast of Arabia. There was some great centre of world commerce low on the Red Sea about eight hundred miles south of Port Said.

"Tavor said that, when he began to think about the thing, the caravan route was pretty clear to him. Arabia seemed to have been connected, in the remote age, with Persia at the Strait of Ormus, so there was a direct overland route. That put another notion into Tavor's head: these treasure caravans must have crossed the immense sandy Desert of El-Khali. And this notion developed another: if one were seeking the wreck of any of these treasure caravans, he would be more likely to find it in the El-Khali than in the Shamo."

Barclay moved away from the fire, got a chair and sat down. He was across the hearth from me. He looked about the room and at the curtained windows that shut out the blue night.

"You can't sleep," he went on, "so I might just as well tell you all this. A good deal of it is what the lawyers call *obiter dicta*—when the judge gets to putting in stuff on the side; but it's a long time till daylight."

He had taken a small chair and he sat straight in it after the manner of a big man.

"You see the treasure carried south across the Shamo would be 'gold wheat' (dust, we'd call it), packed in green skins. You couldn't find that. But the caravans crossing the El-Khali would carry this gold in bricks for the great west trade. Now, a gold brick is indestructible; you can't think of anything that would last forever like a gold brick. Nothing would disturb it; water and sun are alike without effect on it.

"That was Tavor's notion and he went right after it. Most of us would have slacked out after two years in the hell-hole of Central Mongolia. But not Charlie Tavor. He got down to Arabia somehow—God knows, I never asked him—and he went right on into the great sandy desert of Roba El-Khali. The oldest caravan

route known runs straight across the desert from Muscat to Mecca. It's a thousand miles across—but you can strike the line of it nearly four hundred miles west in a hundred miles' travel by going due south from the coast between fifty degrees and fifty-five degrees.

"You'll find this old caravan route drawn on the map, a dead-straight line crossing the thirty-third parallel. But the man that put it on there never travelled over it. He doesn't know whether it is a sunken plateau or an elevated plateau, or what the devil it is that this old route runs across. And he doesn't know what the earth's like in the great basin of the El-Khali; maybe it's sand and maybe it's something else."

Barclay stopped and looked queerly at me.

"The Doctor Cooks have put a lot of stuff on us. . . . The fact is, there's six million square miles of the earth's surface that nobody knows anything about."

He got a package of American cigarettes out of his pocket, selected one and lighted it with a fragment of the box thrust into the fire.

"That's where Tavor had been in the last year. When the ambulance picked him up he'd crawled around the Horn in a Siamese tramp."

He paused.

"Great people, the English; no fag-out to them. . . . Look how Scott went on in the Antarctic with his feet frozen. It's in the blood; it was in Tavor.

"I sat there that winter night in my room in New York while he told me all about it.

"It was morning when he finished—the milk waggons were in the street. And then he added quite simply, as though it were a matter of no importance:

"'But I can't go back, Barclay, old man; my tramping's over. That was no fit I had on the dock.'

"He looked at me with his dead eyes in his tan-coloured plaster face. You've heard of the hemp-chewers and the betel-chewers? My word! All that's baby-food to a thing they've got in the Shamo. It's a shredded root, bitter like a cactus, and when you chew it, you don't get tired and you don't get hot. You go on and you don't know what the temperature is. Then

some day, all at once, you go down, cold all over like a dead man; that time you don't die, but the next time—"

Barclay snapped his fingers without adding the word.

"And you can calculate when the second one will strike you. It's a hundred and eighty-one days to the hour."

Then he added:

"That was the first one on the dock. Tavor had six months to live."

The big man broke the cigarette in his fingers and threw the pieces into the fire. Then he turned abruptly towards me.

"And I knew where he wanted to live for those six months. The old dream was still with him. He wanted that country house in his native country in England, with the formal garden and the lackeys. The finish didn't bother him, but he wanted to round out his life with the dream that he had carried about with him.

"I put him to bed and went down into Broadway, and walked about all night. Tavor couldn't go back and he had to have a bunch of money.

"It was no good. I couldn't see it. I went back. Tavor was up and I sat down to a cross-examination that would have delighted the soul of a Philadelphia lawyer."

Barclay paused.

"It was all at once that I saw it—like you'd snap your fingers. It was an accident of Charlie's talk—one of those *obiter dicta* that I mentioned a while ago. But I stopped Charlie and went over to the Metropolitan Library; there I got me an expert—an astronomer chap, as it happened, reading calculus in French for fun. I gave him a twenty and I looked him in the eye.

"'Now, Professor,' I said, 'this dope's got to be straight stuff; I'm risking money on it. Every word you write has got to be the truth, and every line and figure that you put on your map has got to be correct with a capital C!'"

"'Surely!' he said. 'I shall follow Huxley for the text and I shall check the chart calculations for error.'

"'And there's another thing, Professor: You've got to go dumb on this job, for which I double the twenty.'

"He looked puzzled, but when he finally understood me, he said, 'Surely!' again, and I went back to my apartment.

"'Charlie,' I said, 'how much money would it take for this English country-life business?'"

"His dead eyes lighted up a little.

"'Well, Barclay, old man,' he replied, 'I've estimated it pretty carefully a number of times. I could take Eldon's place for six months with the right to purchase for two thousand dollars paid down; and I could manage the servants and the living expenses for another four thousand. I fear I should not be able to get on with less than six thousand dollars.'

"Then he added (he was a child to the last:) 'Perhaps Mr. Hardman will now be able to advance it; he promised me a further per cent.' Those were his words, when the matter was finally concluded.

"Then ten thousand would do?"

"My word!" he said. "I should go it like a lord on ten thousand. Do you think Mr. Hardman would consider that sum?"

"I'm going to try him," I said; "I've got some influence in a quarter that he depends on."

"And I went out. I went down to my bank and got twenty United States bonds of a thousand each. At five o'clock, the professor had his dope ready—the text and the chart, neatly folded in a big manila envelope with a rubber band around it. And that evening I went up to see old Nute."

Barclay got another cigarette. There was a queer cynicism in his big pitted face.

"The church bunch," he said, "have got a strange conception of the devil; they think he's always ready to lie down on his friends. That's a fool notion. The devil couldn't do business if he didn't come across when you needed him."

"And there's another thing. The old-timers, when they went after their god for a favour, always began by reciting what they'd done for him. That was sound dope! I tried it myself on the way up to old Nute's apartment on Fifth Avenue.

"I went over a lot of things. And whenever I made a point, I rapped it on the pavement with the ferrule of my walking stick, as one would say, 'You owe me for that!'"

"You see I was worked up about Tavor. When a man's carried a dream over all

the hell he'd pushed through, he ought to have it in the end."

Barclay paused and flicked the ashes from his cigarette. "You know the swell apartments on Fifth Avenue; no name, only a number; every floor a residence, only the elevators connecting them. I found old Nute in the seventh; and I was bucked the moment I got in.

"The door from the drawing-room to the library was open. The Harvard don was going out—the one Nute had employed to get up his thesis for the Royal Society of London. And I heard his final remark, flung back at the door: 'What you require, sir, is the example case of some new exploration—one that you have yourself conducted.'

"That bucked me; the devil was on the job!"

Barclay stopped again. He sat for a moment watching the smoke from the cigarette climb in a blue mist slowly into the beautiful fresco of the ceiling.

"I told old Nute precisely what I've told you: how I'd backed Tavor for his last adventure, and where he'd been—all over Central Mongolia and finally across the Central Mongolia and finally across the great sandy desert of El-Khali. And I told him what Charlie was after—the theory he started with and his final conclusion when he made his last push along the old caravan route west from Muscat.

"I went into the details, and the big notion that Tavor had slowly pieced together; how the gold was mined in the ranges south of Siberia, carried in green skins to lower Mongolia, melted there and taken for trade south-west across the El-Khali to an immense Babylon of commerce of which the present Mecca is perhaps a decadent residuum.

"I put it all in: the accessibility of this desert from the coast on three sides, how the old caravan route parallels the thirty-third meridian, and how Charlie struck it four hundred miles out into the desert in a hundred miles' travel due south in longitude between fifty degrees and fifty-five degrees; all the details of Tavor's hunt for the wreck of one of these treasure caravans.

"Old Nute looked at me with his little hard eyes slipping about.

"And he didn't find it?" he said.

"Now, look here, Nute," I said; "you're not trading with Tavor on this deal. You're trading with me, and I'm just as slick as you are. You'll get no chance to slip under on this. You forget all I've told you, just as though it had nothing to do with what I'm going to tell you, and I'll come to the point."

"Forget it?" he said.

"Yes," I said, "forget it. I'm not going to put you on to what Charlie knows?"

"Hardman's voice went down into a low note.

"What does he know?" he said.

"I looked him squarely in the little reptilian eyes.

"He knows where there is a treasure in gold equal in our money to \$300,000!"

"Old Nute's little eyes focused into his nose an instant. Then he took a chance on me.

"What's the country like?"

"I went on as though I didn't see the drift.

"Tavor says this area of the earth's surface is a great plain, practically level, sloping gradually on one side and rising gradually on the other."

"Sand?" said Nute.

"No," replied. "Tavor says that, contrary to the common notion, this plain is not covered with sand. It's a kind of chalk deposit."

"Hard to get to?"

"Old Nute shot the query in with a little duck of his head.

"I went straight on with the answer.

"Tavor says it's about five or six days' journey from a sea-coast town."

"Hard travelling?"

"No. Tavor says you can get within two miles of the place without any difficulty whatever—he says anybody can do it. The only difficulties are on the last two miles. But up to the last two miles, it's a holiday journey for a middle-aged woman."

"Old Nute grunted. He put his fat hands together over his waistcoat and twiddled his thumbs.

"Well," he said, "what's in your mind?"

"It's like this," I said. "Tavor's down and out. He's only got six months to live.

Fifth Avenue piled full of gold won't do him any good if he's got to wait for it. What he wants is a little money quick."

"Old Nute's eyes squinted.

"How much money?" he said.

"Well," I said, "Tavor will turn his map over to you for ten thousand dollars. . . . Death's crowding him."

"Old Nute's fat fingers began to drum on his waistcoat. 'How do I know the gold's there and the map's straight?'"

"Then I took my 'shooting irons' out of my pocket and laid them on the table.

"There," I said, "are twenty one-thousand-dollar United States bonds, not registered"—and I put my hand on one of the big Manila envelopes. "And here," I said, "is an accurate description of the place where this treasure lies and a map of the route to it." And I put my hand on the other.

"Now," I went on, "I believe every word of this thing. Charlie Tavor is the best all-round explorer in the world. I've known him a lifetime and what he says goes with me. We'll put up this bunch of stuff with a stakeholder for the term of a year, and if the gold isn't there and if the map showing the route to it isn't correct and if every word I've said about it isn't precisely the truth, you take down my bonds and keep them."

"Old Nute got up and walked about the room. I knew what he was thinking: 'Here's another one of 'em—there's all kinds.'

"But it hooked him. We wrote out the terms and put the stuff up with old Commodore Harris—the straightest sport in America. Nute had the right to copy the map and the text, and a year to verify it. And I took the ten thousand back to Tavor."

Barclay got up and went over to the window. He drew back the heavy tapestry curtains. It was morning; the blue dawn was beginning to illumine Monaco and the polished arc of the sea.

"I give the devil his due for that," he said. "Charlie Tavor got his dream at the end; he died like a gentleman in his Eng-

lish country house with the formal garden and the lackeys."

"And the other man got the treasure?"

Barclay replied without moving.

"No, he didn't get it."

"Then you lost your bonds?"

"No, I didn't lose them; Commodore Harris handed them back to me on the last day of the year."

I sat up in my big lounge chair.

"Didn't Hardman make a fight for them, if he didn't find the treasure? Didn't he squeal?"

Barclay turned about, drawing the curtain close behind him.

"And he laughed out of the high-brow bunch that he was trying to get into? . . . I said old Nute was a crook, but I didn't say he was a fool."

I turned around in the chair. "I don't understand this thing, Barclay. If the treasure was there, and you gave Hardman a correct map of the route to it, and it lay on a practically level plain, and he could get within two miles of it without difficulty in four or five days' travel from a sea-coast town, why couldn't he get it? Was it all the truth?"

"It was every word precisely the truth."

"Then why couldn't he get it?"

Barclay looked down at me, his big pitted face illumined with a cynical smile.

"Well," he said, "the trouble is with those last two miles. They're water straight down: The level plain is the bed of the Atlantic Ocean and that gold is in the hold of the *Titanic*."



THE ILLAWARRA DISTRICT



THE BEAUTIFUL ILLAWARRA
The Coast near Stanwell Park

A delightful coastal district, embracing many pleasant holiday resorts within easy rail journey of Sydney.

THE WOMBEYAN CAVES

By FLORA A. TIMMS.

THE run from Goulburn to the Wombeyan Caves is most enjoyable. The road passes first through the rich volcanic soil of the Taralga and Richlands districts, and then the long stretch of sandy scrub across the Great Divide. Here begins the steep descent of the mountain. After one becomes accustomed to precipices and sharp turns, the fine panoramic view can be appreciated and involuntarily Cowper's words come to mind: "Nature is but a name for an effect whose cause is God."

some distance, breaks upon the ear and all along its banks, majestic old water oaks stand sentinel-like as if guarding the little valley from the grim mountains beyond. On the morning following our arrival we climbed up one of the lesser ridges, and gazed on the scene spread before us; the towering cliffs with suggestive formation, the sunken valley, the wooded gorges, and the deep pools.

For the first inspection we equipped ourselves with candles and followed the guide across the little valley, and along



PINE TREES AND GROTTOS,
WOLLONDILLY CAVE,
WOMBEYAN CAVES.

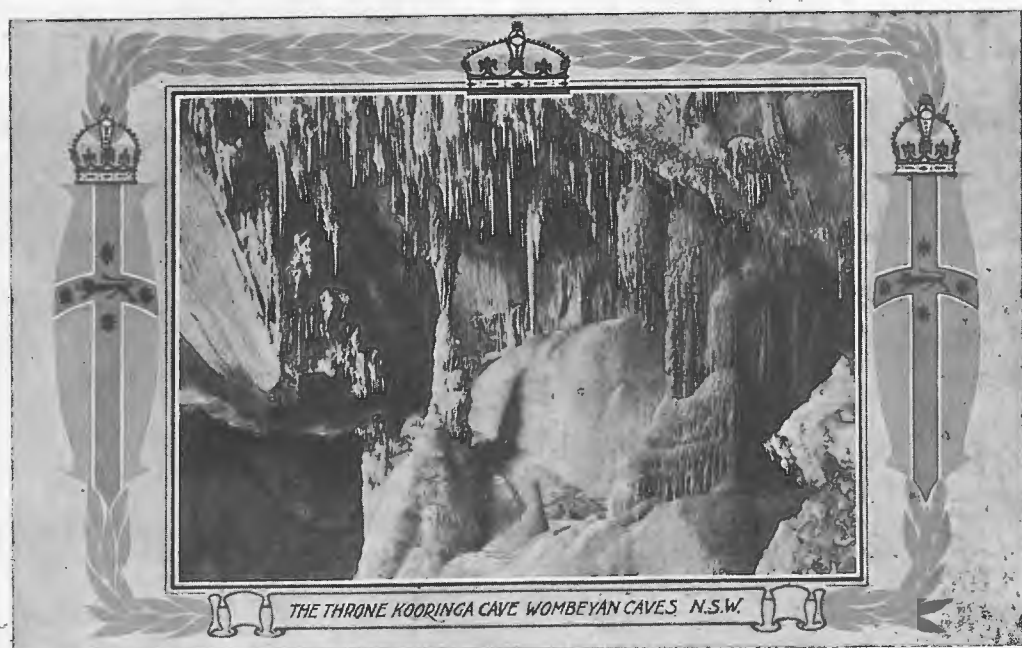
Once the descent is safely negotiated, the valley lies not far below, whilst across it another precipitous mountain rises up. Winding around its face the Bowral to Wombeyan Road is plainly discernible. Nearing the end of the journey, a striking contrast is afforded between the rich green of the narrow strip of valley and the stern old ranges surrounding it. The soft ripple of the winding creek, which at the further end of the valley loses itself in the hills to emerge again at

the side of a hill. On an inconspicuous knoll, covered with grass and bracken, he stopped and told us how, over twenty years ago, he was bringing the cows home one frosty morning, when one of them put her foot in a small hole from which vapour immediately issued. The hole was enlarged and with a rope attached firmly to his body he descended the opening and discovered a wonderful new cave. Some years later a thin line of vapour was seen issuing from the ground; but on examin-

ation the hole from which it was coming was found to be no larger than a thimble, and being in a rock digging was impossible. However the rock was eventually blasted and the now famous Junction Caves discovered. The blue vapour is really the warm air of the cave coming in contact with the cold outer air, just as the breath of a human being can be seen in a frosty atmosphere.

After these details had been furnished, the guide unlocked an iron grating, and with torches dimly burning we descended the first ladder and found ourselves in the Wollondilly Caves. Entering the "Wall"—the walls and ceiling of which

From the Fairies' Retreat, a bower in every way worthy of that inimitable race, we passed on to the chamber of mysteries, so-called because of the phenomenon of a drop of water at the end of each stalactite. This causes no surprise in the lay mind, but to the initiated there is something about those drops of water that has not yet been explained. Then came the "Cockatoo," somewhat larger than our cockie, but the attitude with the back slightly arched, as if in the act of spreading its wings, is true to life. Nearby on a pedestal, stands "Lot's Wife." Nature has dealt more kindly with this particular specimen than with



are so fantastically marked—we saw a fine column round the foot of which twisted what seemed at first glance to be a snake, but what away back in the ages was the root of a tree. What a text! Could it be surpassed for 'thrill,' wonder, mystery, romance? The guide enthused as he talked of the effect of the underground streams, limestone, oxygen, capillary attraction, heated air, and pointed out what looked like several strands of black thread suspended from the ceiling. It needed some stretching of our already taut imagination to realise that those "threads" were the fibrous roots of a great tree, that had found their way through a crevice.

her namesake of long ago, in that she is presented to us in woman's most appealing attitude—meekness and sorrow. Then comes the "Cathedral" with its lofty ceiling, splendid galleries, grand organ, pillars and statues—specimens of architecture which would surely fill the soul of Sir Christopher Wren with admiration. The atmosphere of the Cathedral is always compelling, and it was with reluctance that we moved on to see the wonderful miniature formations—the "Fir Forest" and "The Fortifications," behind the breastworks of which an army lies ensconced. It is all so realistic! After drinking of the famous cave waters we move on again and when negotiating



several passages, we come across the marvellous spectacle of stalactite meeting with stalagmite. The guide is anxious to show us "The Junction Caves" and so we regretfully leave the "Wollondilly" Chamber of Wonders behind.

The "Junction Caves" are on a more massive scale than the Wollondilly. The great column so beautifully and regularly formed is 60 feet around. Nearby is an indescribably lovely formation, "The Bridal Veil," which looks like white gauze thickly studded with diamonds. Roughly speaking it is about 15 feet in length, and four feet in breadth. Not far away is a similar formation somewhat smaller, in rich chocolate, also sparkling with gems,

rich and rare. Then there is the chocolate fringe—the creamy, foamy "stuff" suggesting ice cream, up-to-date confectionery and bunches of grapes.

Across a passage, massive white curtains are most artistically draped under the great canopy. Silence reigns amongst the party; the sights before us are too big for words, and we smile sceptically as the guide endeavours to move us on to see "something better." As we stand before "Chalker's Blanket," we realise that here is one of nature's masterpieces. It is about a quarter of an inch in thickness, and the size and colour of a new blanket. The border stripes are in the same position as on the real thing and are also the

same width, distance apart, and vary, from a dull red to a paler shade, as in the genuine article. The end is marked in such a way as to look like the usual edging of loose red stitching. The whole plan is of unerring regularity, standing out as if thrown over a clothes' line with one corner slightly drooping. When the light was placed behind it, the effect was even more startling.

Last of all we were taken to a limestone platform, from which we looked down a dark abyssmal gorge. When the vision became accustomed to the gloom, a narrow stream of water could be discerned 70 feet below. The guide with a canoe of his own making, had ventured on that eerie, subterranean passage, and discovered that it widened out considerably. Whether it is a pool or flows on is still a mystery.

Wonderful as the caves are the grand Archway is perhaps even more interesting. Ages ago there was a cave there

When Riches are Forgotten.

The rich men, the money masters in all stages of civilisation, have been quickly forgotten unless there was something else besides their money that entitled them to fame. Many wealthy men of Rome and ancient Greece do not live in our history, while other men who had no wealth, who were in fact very poor, like Socrates, are enshrined in the hearts of humanity. The world is only grateful to the men who served it. Unselfish service is what the world worships, not wealth alone. It builds its monuments to men who served it. Unselfish service, not money, immortalises a life.

The Little Things.

It takes so little to make us glad, to cheer us up, to make us happy; it takes and costs so little to be kind, to be thoughtful, to be considerate; it takes so little to cheer others up who are discouraged, so little to lend a helping hand, yet it means so much, to others as well as to ourselves.

We think too much about doing the things which look big in our lives, and we think too little of the everyday little

built on an even more colossal scale than those still in existence, but whether from the effects of time, or some great upheaval, it is a cave no longer but a mosaic arch of grey rock, the stalactites, although bereft of their dazzling beauty, being easily discernible on the roof. High up in a cleft of the wall one can trace what would almost pass for the work of one of the old masters—a figure of the Christ—with bowed head supported by a column. Not far off, a life-sized Madonna can be picked out as if through a film.

In such surroundings one's thoughts instinctively turn to the dim past—a past that seems almost to live again in the environment of such weird and beautiful evidences of Nature's handiwork. The sound of the guide's bagpipes breaks suddenly upon the stillness of the air, and we are back once more in the land of reality. Our cave inspection is over, but the memory of the many beautiful sights which we were privileged to view will not readily die.

acts of thoughtfulness, of kindness, the little helpfulnesses to those who are disheartened and down and out. After all, is it not the little things that make up life?

The Worst Thieves.

The thieves that steal the best part of life, that rob us of precious energy out of which we might build a worth-while success, a reputation and a place for ourselves in the world, are the mental thieves—fear, worry, anxiety, jealousy, hatred, malice, spite, and ill will. These are the thieves that spoil our happiness; these are the things that steal from us what is worth infinitely more to us than money—our peace of mind, our change in life. They steal our energy, our vitality, so that we cannot make good with what we have left.

A robust health, a vigorous vitality, these are the things that help us to make good. A vigorous brain must be backed by a vigorous body through right living, a right life; by right eating, right paying, right working. Everything must be right to make the maximum of life possible.

ANIMAL "CRANES" AND "PRESSES"

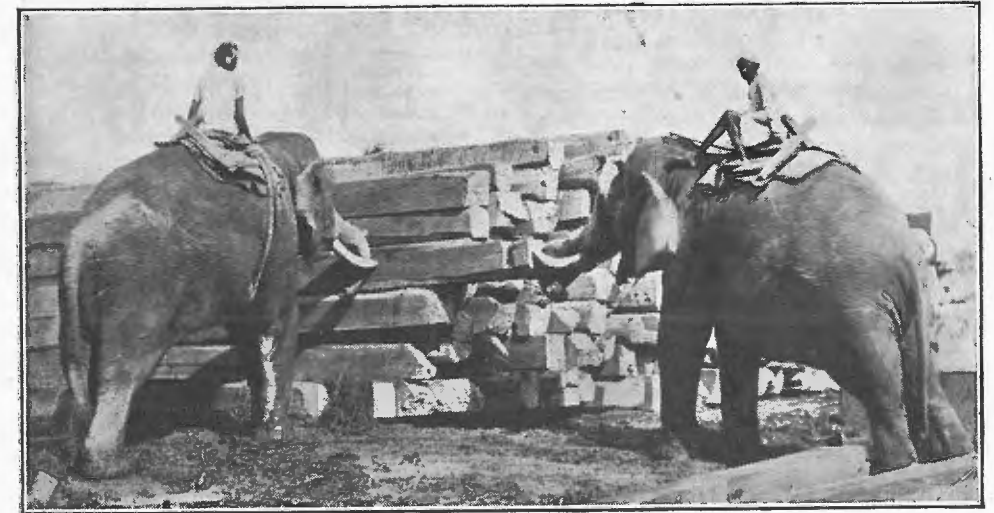
HOW AN ELEPHANT WORKS

FEW people associate elephants with surroundings other than those of a zoo or circus, where they provide a never-ending source of interest and amusement to children and adults by performing various feats of strength and other novel turns which at times bespeak an intelligence almost human in its power of understanding. This is largely accounted for by the fact that few of us have seen the elephant in his natural surroundings. We have

many of the services for which machinery is used in Australia.

It does not need a very wide stretch of imagination to visualise the magnitude and variety of the tasks which an elephant would perform in the hands of a master who understood him thoroughly. Unlike horses and bullocks, the huge quadruped has, in its trunk, a possession with which it can perform tasks quite as delicate and scores of times as great as a man can with his hands.

One can picture this patient animal lum-



A fine photograph showing the elephant doing work equal to a crane and an hydraulic press, in a Burmese teak yard.

heard wonderful tales of his fidelity to his master, and occasionally of the hideous injury which he will inflict on some poor unfortunate individual who arouses his ire, by picking him up with his trunk, dashing him to the ground and then trampling him to death with his ponderous feet. It probably has never occurred to us that in the country of his origin, where his strength and capabilities are fully understood by the residents, he is utilised in performing

bering along dragging a huge load, or alternately lifting some great weight or utilising its strength in doing the work of an hydraulic press.

The accompanying photograph shows two elephants actually at work in a Burmese teak yard, and it serves the purpose of driving home the lesson that there are few creatures on this earth which man cannot educate to his use when the necessity arises.



THE delivery of the new P. & O. liners designed to replace those lost during the war has been delayed by various causes. In the annual report of the Company reference is made to the delay which is mainly attributed to labour troubles, and the fact that the Admiralty has all along shown a disposition to retain control of many vessels. Of the five ships of the "B" class building by Harland & Wolff for the Company's Australian emigrant and cargo business, only one, the *Baradine*, has joined the fleet. Another, the *Ballarat*, was launched over a year ago, but her completion has been delayed by the joiners' strike. She will probably be delivered in the course of the next few weeks. The *Barrabool* was launched recently. The construction of the other two vessels is progressing. Work is proceeding on the four large mail and passenger steamers, *Moldavia*, *Mongolia*, *Maloja*, and *Mooltan*. The *Moldavia* and *Mongolia* are launched, and will probably be completed by April or May, and the directors hope to get delivery of the *Maloja* and *Mooltan* towards the end of the year.

German Ships for Australia.

It is freely reported that German shipping companies will shortly inaugurate a steamship service to Australia, and speculation is rife as to what action the Government will take to prevent unfair competition with British-owned shipping owing to the very low rates of wages paid to officers and men employed on the German vessels. It is anticipated that the wide powers possessed under the Navigation Act will enable adequate measures to be taken to protect British and Australian interests.

Oil Fuel for Ships.

From time to time attention is directed to the possibilities offered by oil fuel in the economical working of ships. Numerous oversea vessels burning oil fuel visit Australia, chief of which are the Danish funnel-less motor ships, and the oil fuel vessels of the General Steamship Corporation of San Francisco. Oil fuel is not yet in use in the Australian inter-State trade, but the Western Australian Government are owners of a Diesel motor ship, the *Kangaroo*, while the new Commonwealth liner *Moreton Bay* is equipped to burn oil fuel.

The practical and economical advantages of oil-driven shipping in relation to the revival of the shipping trade has been the subject of various expert articles in Great Britain, including Brassey's "Naval Annual." The depression in freights and increased costs of operation, says the "Annual," have drawn marked attention to the economies that may be effected by the substitution of oil for coal as fuel for the generation of the propulsive power of vessels. Other things being equal, one ton of oil fuel utilised in Diesel engines drives a vessel three times as far as one ton of coal burned in the ordinary way under boilers, while if oil be used as fuel with water tube boilers and geared turbine engines, the arrangement is twice as efficient as when coal is the source of energy. Besides this increased efficiency of power production there are other advantages, ease of bunkering, avoidance of trimming at sea, and the reduction of personnel for firing and supervision.

In fact practically the only problems to be faced now are not mechanical ones,

but hinge on the question of the quantity of oil which is likely to be available at reasonable prices for marine purposes.

A Lucky Ship.

The twin-screw steamer *Alesia*—one of the first twin-screw vessels to be built—was recently an object of interest at the old railway pier at Williamstown, Victoria, where she was loading a cargo of wheat. The *Alesia* was formerly owned by the Hamburg-Amerika Line, but is now the property of the Indian Government. She was seized at Rangoon, her capture being regarded as a smart piece of work on the part of the pilot. The steamer was afterwards used for the transportation of ammunition by the Indian Government. In 1918 she ran ashore on the Khorya Mohora islands near Aden and her bottom was torn out, the water reaching above the tank tops. In spite of the great risk involved, the captain decided to take the steamer to London—a distance of three thousand five hundred miles. The voyage was safely accomplished after many exciting moments and there the *Alesia* was repaired. Subsequently the Germans made many attempts to sink her, and once, when loaded with two thousand five hundred tons of ammunition, a torpedo missed her by six feet. One peculiar feature about the *Alesia* is that her twin propellers overlap. In this respect there is only one other steamer of a similar type afloat.

New Tasmanian Service.

Arrangements were completed some time ago for the formation of a new shipping company to be known as the Tasmanian Steamers Proprietary Limited. This Company has acquired the turbine steamer *Nairana* from Huddart, Parker, Limited, and the *Loongana* and *Oonah* from the Union Steamship Company. The new company has a nominal capital of £250,000, comprised of fully paid up shares of £1 each, and Messrs. W. T. Appleton, of Huddart, Parker, Limited, and Mr. Val Johnson, manager of the Melbourne branch of the Union Steamship Company, have been appointed directors. The Company has adopted a yellow funnel with a black and red top for its steamers, this being a combination of the colours of the two lines above-mentioned. The house flag will also be a combination of the flags of the two

companies, with the letters "T.S." printed on it.

Both the Union Steamship Company and Huddart, Parker, Limited, have been appointed agents for the new company, and hence the present arrangements for bookings on the steamers will remain unaltered.

Japanese Shipping Service.

One of the largest Japanese shipping companies, Yumashita Kisen Kaisha Limited, recently extended its service to Australia. The vessels of this line will leave Japan regularly for American ports, and after discharging there will load for Australian ports at Puget Sound, Seattle, San Francisco and other Pacific ports. From thence they will proceed either direct or *via* New Zealand to Australia. The return voyage will be made to Japan direct. This is probably only the beginning of many similar extensions of shipping services to Australia.

Modern Motor Ship.

The motor ship *Yngaren*, which visited Australian ports recently is the most modern vessel of her class in the world, and cost over half a million pounds to build. Her gross tonnage is five thousand two hundred, and her cargo carrying capacity exceeds nine thousand tons. She consumes nine tons of oil daily which is equivalent to about forty-five tons of coal, and it is estimated that a saving of approximately £80 a day is effected through the economies made possible by the use of oil fuel.

The accommodation is of the most luxurious order. A magnificent suite of compartments for the master is provided on a special deck, and the passengers, of whom there are about eight, are given every luxury. The officers and engineers' accommodation is similar to that for the passengers, two-berth cabins being provided. In addition, hot and cold water is constantly available for all hands, together with electric light, spring beds and artificial heating and cooling arrangements.

The *Yngaren* carries sufficient oil fuel for a continuous voyage of thirty-three thousand miles, and the supply she carried on her voyage to Australia was purchased in England last October at 72s. a ton.

Fire on Steamer.

A fire broke out in the coal bunkers of the steamer *Helmslock* at Adelaide recently. The vessel arrived from Colombo in ballast and after loading wheat and taking on a quantity of Collie coal at Bunbury a fire was discovered in the cross bunker, where about three hundred tons of coal were stored. The fire brigade was soon on the scene and succeeded in extinguishing the outbreak on the side of the bulkhead nearest to the hold where the wheat was stored. The latter was unloaded as speedily as possible, but as the coal still continued burning it was found necessary to discharge it also. The fire was the result of spontaneous combustion.

* * *

"Euroa" Successfully Launched.

The launching of the new Commonwealth steamer *Euroa* from the Williamstown yards on January 27 attracted a great deal of attention locally. The christening ceremony was performed by Mrs. Greene, wife of the Minister for Defence, and amongst those present were the Federal Minister of Works and Railways (Mr. Foster), the Minister of Defence (Mr. W. M. Greene) and the manager of the Commonwealth line of steamers (Mr. E. A. Eva). The steamer *Euroa*, which has taken about nine months to build, is three hundred and thirty-one feet long, forty-eight feet wide and twenty-six feet deep. She is of six thousand tons dead weight. All the materials in her construction are Australian, with the exception of the steel plates. The engines that will be fitted in her are the product of the factory of Thompsons' Proprietary Limited, of Castlemaine.

At the luncheon held after the launching the Minister for Defence stressed the value of the shipbuilding industry to Australia. In order to reap the fullest benefit, however, it was necessary to be able to build more economically, he said. Australia could not otherwise compete with the rest of the world.

Mr. A. Eva, manager of the Commonwealth line of steamers, said the Government had nothing but praise for the workmanship embodied in the five vessels launched from the Williamstown yards. He was confident a full measure of success was ahead of the Commonwealth Line.

Death of Captain Innes.

Captain G. Innes, R.A.N.R., assistant marine superintendent of the Commonwealth line of steamers, died suddenly at his home at North Essendon, Victoria, at the end of January. Captain Innes, who was only forty-six years of age, arrived in Australia as second officer of the *Gracchus* about twenty years ago. Later he commanded the *Darino*, the *Hymettus* and other steamers of the Currie Line. Eventually he joined the Howard, Smith Company. In 1915 he was at the naval depôt at Williamstown, afterwards assuming charge of the *Protector*, and later filling the position of naval intelligence officer at Rabaul. A little over a year ago he transferred to the position he occupied at his death.

* * *

Sydney Shipping Master to Retire.

Captain W. H. Mason, Government Shipping Master at Sydney, is shortly to relinquish that post and retire from the public service. Captain Mason has had an eventful career since at the age of thirteen he joined the naval training ship *H.M.S. Worcester* at Southend, England. His next step was to the Aberdeen White Star Line, from which, after about four years' service, he passed to the Shaw, Savill Line as third officer on the *Queen Bee*, then in the New Zealand trade. This vessel was some time later lost on Cape Farewell Spit, New Zealand, and Mr. Mason was the only one of a boat's crew of sixteen who got over the cliffs after the boat had gone to pieces in the breakers. For seven days he was without food on the uninhabited island of Daurville, but the *H.M.S. Sappho*, which had been sent from Wellington to search for possible survivors, rescued him. In 1878 Captain Mason came to Sydney and took up the position of chief officer on the training ship *Vernon*, commanded by Captain Neitenstein. He remained there for fifteen years, at the end of which he was transferred as lieutenant on board the *Sobraon*, of which he was given command upon Captain Neitenstein's appointment as Comptroller of Prisons. Later, when the Federal Government took over the training ship and changed the name to *Tingira*, the position of commander was abolished. It was then that Captain Mason was appointed to the office from which he is now about to retire after eleven years' service.

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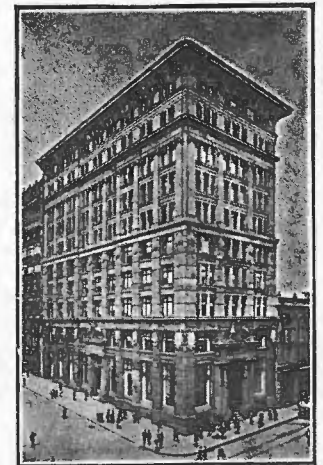
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In its appeal to the imagination the practical application of the theory of the radiation of electric waves through the ether transcends other inventions, and at the same time gives place to none in its value as a utility serving mankind's needs.

The banishment of isolation at sea, the pleasure of reading the daily news of the world on board ship, and the transference of one's thoughts through the ether to one's friends ashore or on other ships—undreamt of 30 years ago—are commonplaces of to-day.

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Lightening Wharf Labour.

An interesting demonstration of an Elwell Parker electric loading truck was recently given in Melbourne when the appliance, which was on trial, was used in assisting to unload the steamer *Katoomba*. The machine is capable of lifting an ordinary four-wheeled truck used on the wharves, and transporting it wherever it is wanted. The operation of raising or lowering the load occupies only ten seconds, and owing to the steering being operative on all four wheels the truck is able to negotiate very congested areas. In addition to lifting and carrying loads up to four thousand pounds, the truck will haul a load of four tons.

* * *

New Chairman Oversea Shipping.

At a recent meeting of the Oversea Shipping Representatives' Association, at which the resignation of the chairman, Mr. H. W. Corry, was received, Mr. Robert C. Reed, a partner in the firm of Gibbs, Bright & Co., was elected to fill the position.

Mr. Reed is sixty-four years of age, and prior to coming to Australia in 1877 was connected with the shipping industry in England. In 1903 he was admitted to partnership in Gibbs, Bright & Co. Mr. Reed has travelled extensively, and only recently returned to Sydney after his twelfth visit to Europe.

* * *

Coastal Steamer Abandoned.

The wooden vessel *Mokau*, one hundred and sixty-four tons, which was beached in Wreck Bay on January 19, was afterwards abandoned to the underwriters. The vessel was bound from Ulladulla to Newcastle with a cargo of silica when she sprang a leak under the boiler. The leak was not considered serious, but in order to effect repairs it was decided to beach her. Unfortunately while in that position she experienced the full force of the rough weather which spread along the coast shortly afterwards and sustained considerable damage as a result of which she was abandoned by her owners.

* * *

Steamer to Replace "Wollongbar."

Arrangements have been completed for the construction of a new steamer to re-

place the North Coast Steam Navigation Company's passenger vessel *Wollongbar*, which met with disaster at Byron Bay in May last.

The new steamer, the order for which has been placed with Lithgows, Limited, Port Glasgow, will be a single screw vessel, and her measurements, length 285 feet, 42 feet beam, and 25 feet moulded depth, and 14 feet loaded draft, compare with length 285½ feet, beam 40 feet, and depth 23.8 feet, of the *Wollongbar*, which had 11 feet freeboard. The engines will be of the four-cylinder triple expansion type, with four cranks, balanced, developing 3,125 horsepower, compared with the *Wollongbar's* 2,400 horsepower four single-ended boilers and two funnels.

Ample provision is being made for butter carriage in cool storage, two holds being insulated. Exceptionally large hatches are specified to facilitate the handling of this cargo. The passenger accommodation for about two hundred is about the same as on the *Wollongbar*. The contract provides for delivery at Clyde on September 15 next, under heavy penalties. Thus the vessel should be in commission for the Christmas trade this year. The North Coast Company's marine engineer, Mr. McAllister, has left Sydney to supervise the construction.

* * *

Scaring Chinese Pirates.

Captain Hall, master of the Chinese steamer *Loong Mow*, running on the Yaangtse Kiang River, arrived in Sydney recently *en route* to New Zealand on holiday leave. Captain Hall has evolved a novel method of scaring off the Chinese bandits who are ever on the look-out for easy victims.

The *Loong Mow* has been fitted with a siren that would do credit to a super-dreadnought. One of its fearful ear-splitting howls is sufficient to imbue even the most hardened of the pirates with the belief that he is pursued by thousands of "devils." Captain Hall describes the voyage up the Yangtse-Kiang as the greatest tourist trip in the world. The river runs through gorges where navigation is dangerous. In places the current runs at the rate of thirteen knots an hour at high water.

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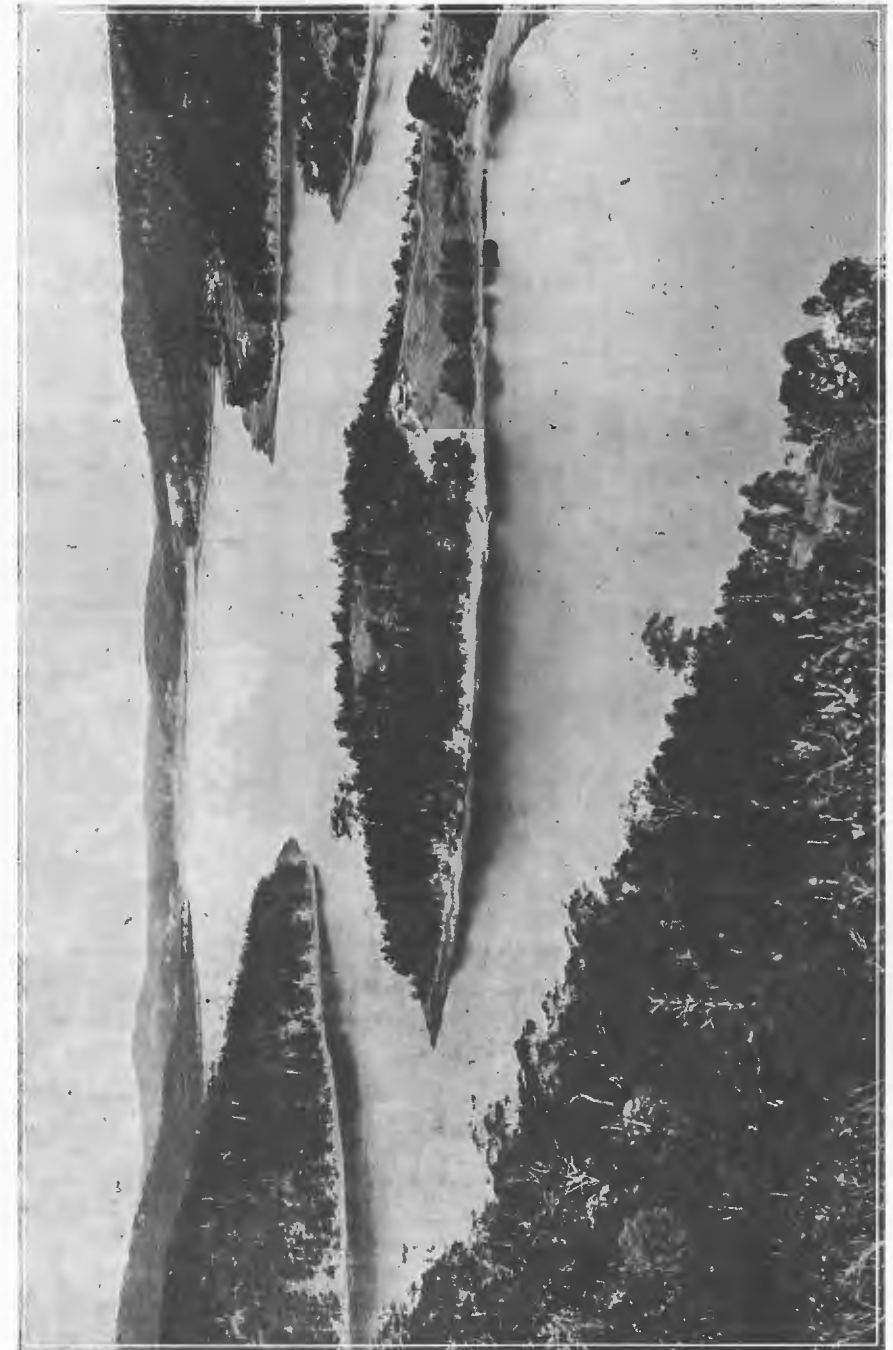
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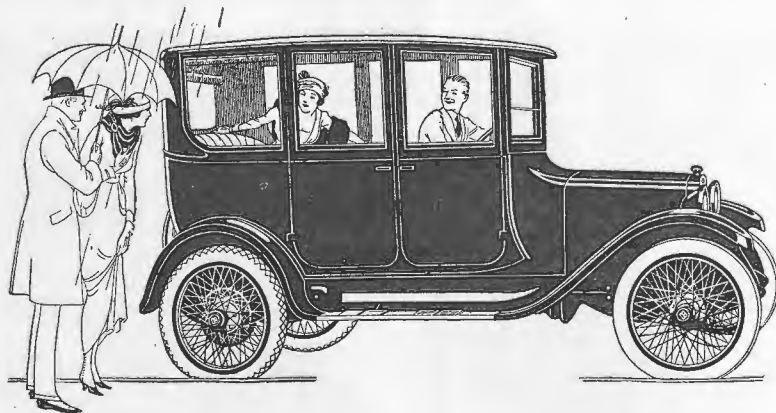


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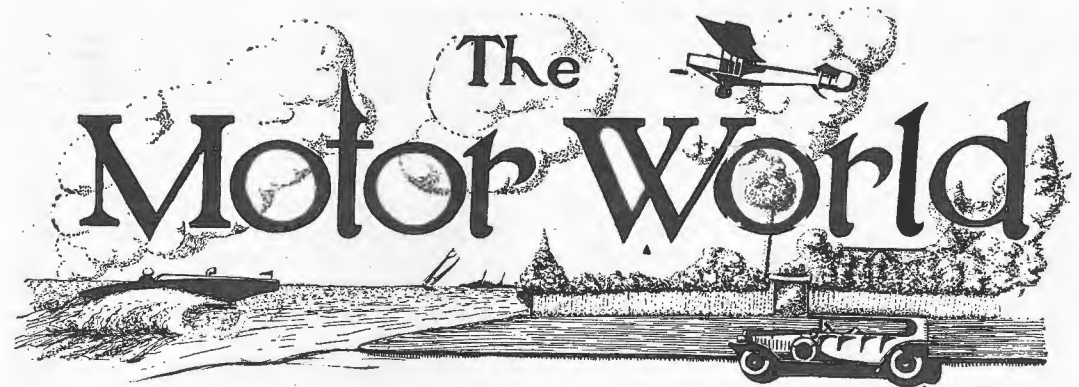
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New Use for Petrol Fumes.

THE motor car has quite unconsciously come to the rescue of distracted farmers desirous of annihilating each and every rabbit coming within reach of their holdings.

Quite recently a motor car going through Bathurst stopped alongside a rabbits' burrow. The petrol fumes attracted, or perhaps rather distracted, a member of the famous firm of multipliers, which was seen to peep out of the burrow sniffing at the new perfume. It didn't take! Possibly, being a true patriotic rabbit the perfume may have been regarded as of alien origin. The motor car, however, was not discouraged—in fact, it set about filling the burrow with petrol fumes, with the idea, no doubt, of leaving a plentiful supply until the next visit.

The effect was magical. Bunny threw up his feet and the ghost, and has earned immortalisation as one of the pioneer rabbits to prove the effectiveness of petrol fumes as a rabbit exterminator.

The remedy has found favour with a number of farmers, who gladly testify to the value of petrol fumes.

Catering for Tourists.

Rome admittedly was not built in a day, but nevertheless much water has flowed under the bridge since the motoring fraternity firmly established itself as an integral part of the nation's make-up. Yet motorists are not catered for in many little niceties and, even necessities, enjoyed by the privileged folk without the encumbrances of a motor car.

Tourists and travellers affecting a carriage and pair or a coach and four experi-

ence no difficulty whatever when seeking attention at important country hotels.

But not so the motorist. If he wants to give his "horse" a drink he is compelled to reconnoitre about a strange township looking for a garage. If he desires to satisfy many other motoring requirements, he must still peg away at the task instead of sitting himself down to a hearty meal and allowing some one else to satisfy his wants, as a modern motorist in a modern age is entitled to expect.

America has led the way in this respect, and the innovation might well be imitated in Australia by those anxious to keep abreast of the times.

Power of Suggestion.

Cyril Watson, a motor car driver, had an extraordinary experience at Young recently.

He drove the Police Magistrate to the Bimbi Court, 32 miles from Young, and while the court was proceeding he was adjusting a spare wheel to the car in front of the courthouse. Swift as lightning came a terrific explosion.

Watson was locking the spare wheel in position when the tube, which was blown up to seventy-five pounds pressure, burst and caused an explosion like a violent thunderclap.

The screwdriver, which he had in his hand, was hurled right across the street, striking the hat of a man who was looking on, and knocking it off.

When both men recovered their wits a moment or two later, Watson found his left hand was bleeding profusely as a result of the palm of the hand having been rent by the force of the explosion.

The other man, in a half-dazed condition, was looking for a cigarette that had been blown from his mouth.

First aid was rendered to Watson's hand, and when he returned to Young about five hours later four stitches were inserted.

A singular coincidence was that inside the courthouse the solicitor cross-examining a witness had just asked the question, "Now, didn't you throw a lighted cracker at this girl and frighten her?" when the explosion outside immediately followed and disturbed the court.

Where to go To-Morrow.

Wiseman's Ferry probably is unsurpassed for a pleasant one-day outing, but the run to Kurrajong will require a lot of beating, for there are few more pleasant runs within the State than that from Sydney to Kurrajong Heights, a distance of about one hundred and twelve miles. All motorists know the fifteen-mile journey as far as Parramatta, turning right through the ancient western town, past the woollen mills, and on to Baulkham Hills (19 miles), keeping straight on past the hotel through Kellyville, Rouse Hill (27), McGrath's Hill (34), Windsor (35). On arriving at Windsor, turn left along the main street, and on reaching the end of the reserve take the turn to the right for Richmond (40), passing *en route* the Hawkesbury racecourse on the left. On leaving Richmond the sharp turn to the left should be taken, and again to the right, after which the Nepean River is crossed by a bridge to North Richmond (42½). After another five miles Little Weeney Creek is crossed, and Lower Kurrajong P.O. passed on the right. Thence for four miles it is a stiff climb to Kurrajong Heights, amid fine scenery, distance fifty-one miles.

On the return trip again cross Weeney Creek bridge, proceeding until a road to the right is reached four miles from Kurrajong. Take this road, which is the turn-off to Grose Vale. This takes the tourist to North Richmond (nearly sixty-two miles from the start of the tour), and the scenery is very picturesque. The main road is struck near the hotel, where the turn to the right should be taken, and the bridge over the river is again crossed, and Richmond (64 miles) reached. Turn right at the Black Horse Hotel, thence through

Yarramundi (67½) and Castlereagh, and on to Penrith (79). Turning to the left, and a straight run to Parramatta (97) follows. Thence to Sydney, the tourist cannot go astray. Total distance, one hundred and twelve miles.

That Melbourne-Sydney Record.

Lowering the record between Melbourne and Sydney threatens to become to motorists and motor cyclists what the Ashes are to cricketers, or the Davis Cup to tennis players.

Notwithstanding the recent splendid performances with car and cycle from capital to capital, the record looked very sick once or twice during the past month or two, and it will surprise no one if the figures soon go overboard.

On Sunday, February 5, Mr. N. McLachlan endeavoured to lower the motor car record of sixteen hours fifty-five minutes held by Mr. Boyd Edkins, of *Vauxhall* fame. Unfortunately trouble dogged him almost from the very beginning, and although the first thirty-seven miles were covered in thirty-five minutes, a succession of punctures, four in all, compelled Mr. McLachlan to abandon his attempt at Mangalore for the time being. The car was a ninety-horsepower *Stevens-Duryea*, and at the outset a speed of eighty miles per hour was touched at times.

Lowering Side-car Record.

Quite recently Mr. C. Wood, of the Motor Cycle Club of New South Wales, succeeded in lowering the side-car record between Sydney and Melbourne by two hours twenty-three minutes. The time occupied in covering the five hundred and sixty-six miles was eighteen hours fifteen minutes, and the cycle used was a seven-horsepower Harley-Davidson, with a passenger in the side-car. Despite the rough nature of the roads, Mr. Wood got within four minutes of the solo record held by Mr. H. V. Hodgson, of Sydney.

Defeated—But Not Disgraced.

E. Williams, who endeavoured to lower Hodgson's figures during the first week in February, was checked at Gundagai with the smiles of Fortune beaming happily in his direction.

He left Melbourne on Tuesday morning, February 7 at 3 o'clock. At Gundagai he was sixteen hours ahead of his schedule

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MODEL 18-25 H.P.
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Clutch, dry, single-plate
Gearbox, 4 speeds and reverse
Electric Light and Starter
Five Wire Wheels and Tyres, 765 x 105
Wheelbase, 9 feet 6 inches
Track, 4 feet 8 inches

S.C.A.T.

MODEL 30-40 H.P.
Engine, 4-cylinder, 100 x 150
Clutch, dry, single-plate
Gearbox, 4 speeds and reverse
Electric Light and Starter
Five Wire Wheels and Tyres, 880 x 120
Wheelbase, 10 feet 6 inches
Track, 4 feet 10½ inches

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and seemed to be going strong for the record. He came to grief at Coolac and spent a couple of hours trying to repair the damage. Finally he abandoned the idea, but he intends to have another attempt at a later date.

Motor Boating.

Darcy Donkin deserves every praise for his courage in tackling *Tortoise* with *Greyhound* during the month. He is a good sport, and he holds the championship of the Harbour.

Motor Cycling.

The Motor Cycle Club of New South Wales will hold its annual reliability trial from Sydney to Lithgow on Saturday, March 4. During their stay at Lithgow competitors will be the guests of the Lithgow Motor Cycle Club.

The annual meeting of the Motor Cycle Club of New South Wales was held during the month. The report announced that a record had been established in the membership and in the number of competitions held.

A number of officers were elected unopposed, but great interest was centred in the several positions contested.

There were three nominations for the Hon. Secretaryship. J. A. Fair, after seven years' service, did not seek re-election. V. Blakett was elected to the position, scoring twenty-two votes to the nineteen of V. Flanagan and fifteen by W. Collins. The following were appointed to act as Committee: Messrs. Stafford, Harry, Clarkson, Prephewey, Flanagan, and Howarth; Vice-Presidents, Messrs. A. Ed. Austin, R. Fennell, E. Wiseman and J. A. Fair; Auditors, Messrs. Fred Roberts and R. King.

ROYAL AUTOMOBILE CLUB

ENTERTAINS PRESSMEN

A PLEASANT little function was held at the headquarters of the New South Wales Branch of the Royal Automobile Club of Australia on the evening of February 15, when the Press and Parliamentary Committee of the Club entertained the motoring pressmen of Sydney at dinner. The function is an annual one which the Club inaugurated by way of showing its appreciation of what the press has done, and is doing, to further the interests of motoring in Australia.

Mr. R. V. Hodgson, Chairman of the Committee, presided, and in proposing the toast of the "Visitors" and the "Press," gave some interesting particulars of the Club's past activities and future plans. The Press and Parliamentary Committee had been formed, he explained, to watch the Club's interests in those two spheres which wielded such a big influence on its progress. Like most innovations motoring was looked upon at the beginning as something which had no right to exist at all, and it required many years of patient work to dissipate the prejudice against it. For-

tunately people were now beginning to realise that wherever motor services were inaugurated they invariably meant progress, and while motorists still laboured under many disabilities, the number was gradually being lessened. One reform which the Club hoped to bring about in the near future was the establishment of a special court to deal with all traffic cases. The present method of adjudicating upon breaches of the Traffic Act was unsatisfactory insofar as practically every magistrate held a different view as to the seriousness of the cases which came before him. The result was that the motorist did not know where he was.

Mr. Hodgson dealt at length with the Club's proposals regarding road and bridge building, and referred to the famous "Paddy's River Crossing" as the most urgent matter in sight at present.

Mr. Fred Walsh, in supporting the Chairman's remarks, enlarged upon the national value of motor transport services. In his opinion the money which, under ordinary circumstances, the Government

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Announcement!

WE take pleasure in announcing a very substantial reduction in the price of Hupmobile Cars. Our present price for a five-seater Hupmobile, with detachable wire wheels is

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THE NEW PRICE, COMMENCING MARCH 1st WILL BE

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will make available from time to time for building railway lines would be much more wisely and economically spent in laying good roads throughout the length and breadth of the land. Motor transport would then open up the country as the railway can never hope to do.

Mr. Frank Farnell, Chairman of the National Park Trust, in responding to the toast of the "Visitors," paid a tribute to the progressive spirit of the Club, and mentioned that in the latest proposal to establish a country home for members where golf and other games could be indulged in, the Trustees of National Park were prepared to assist them very materially.

Mr. D. M. Cooper, Chairman of the Roads and Tours Committee of the Royal Automobile Club of Australia, in the course of a happy little speech referred to the immense national value of good roads. Aided by good thoroughfares motor transport would work wonders in developing Australia. The Club believed so thoroughly in the proposals which had been put forward that it was prepared to demonstrate by practical effort in raising money that the project was sound from a national point of view, as well as being of immense benefit to motorists generally.

The various Press representatives present responded to the kindly sentiments expressed by the speakers, and each in turn paid a tribute to the enterprise and courtesy of Mr. H. C. Morgan, the Club's Secretary.

Personal.

The popularity of Mr. R. V. Hodgson, Chairman of the Press and Parliamentary Committee of the Royal Automobile Club, was established beyond doubt at the recent dinner to the motoring pressmen of Sydney. "Ralph" makes an ideal chairman, and contrives to put everyone on good terms with everyone else at any gathering with which he is associated.

Mr. Fred Walsh, of the Royal Automobile Club of Australia, is a great exponent of the transportation value of motor cars and lorries. He said at a recent Club function that he believed the cen-

gested state of Sydney streets could be solved quite as effectively and much more cheaply by the use of motor cars as by building the city railway.

Mr. W. J. McKinney is one of the most interesting conversationalists in the Royal Automobile Club of Australia, when on his pet subject, motor cars. What "Mac" doesn't know about motoring is not worth learning, and more than one budding motorist has had to thank him for practical advice and assistance when launching out on his enterprise.

Everybody who is anybody in the motor world knows Mr. Frank Farnell, the genial Chairman of the National Park Trust of New South Wales. The Royal Automobile Club of Australia freely acknowledges its indebtedness to Mr. Farnell for the facilities which he regularly places at its disposal for holding hill-climbing contests. His latest offer to assist in providing a country home for members at less than one quarter of what it would cost the Club to do it off its own bat, is but another evidence of his keenness to help the institution. It will not, however, add to Frank's popularity amongst Club members—that has long been at high-water mark.

Many a Sydney pressman, when new to his task of doing the motoring rounds, has had to thank Mr. H. C. Morgan, Secretary of the Royal Automobile Club of Australia, for putting him on the right track. Newspaper men are quick to appreciate a service rendered, and it is beyond question that while Mr. Morgan retains his association with the Club it will always have the goodwill of the motor pressmen of Sydney behind it—if only because of his unfailing courtesy.

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His first care is not to sell a new battery. Whatever make of battery is on your car, Exide Service will make it last as long as possible. Only when replacement is essential will an Exide Battery be fitted. The long life and care-free service of the Exide will surprise you.

Exide Batteries are manufactured in U.S.A. by the Electric Storage Battery Co., Ltd., Philadelphia, and in England by the Chloride Electrical Storage Co., Ltd., Clifton Junction, near Manchester.

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SOUTH AUSTRALIA: Unbehaun & Johnstone, Ltd., Rosina Street, Adelaide.

WEST AUSTRALIA: Unbehaun & Johnstone, Ltd., 404 Murray Street, Perth.

NEW ZEALAND: Hope, Gibbons, Ltd., Inglewood Place, Wellington.



MOTOR TRUCKS IN INTER-CITY FREIGHT SERVICE

THE use of the motor truck for inter-city freight service, sometimes supplementing the railroads, and sometimes in direct competition with them, is one of the most interesting features of motor vehicle development in the United States.

The substitution of the motor truck for the horse-drawn waggon has come about very gradually, until the process of replacing the one by the other is almost complete. City deliveries are made almost altogether by motor trucks to-day, as the merchant has found that the truck is not only more economical than the horse, but enables him to carry on his operations over a much larger territory, and in a much shorter time. Similarly, deliveries made to cities by farmers in the surrounding districts are made now by means of trucks, although the replacement of the horse by the truck has not advanced to the extent that it has in the city.

The use of the motor truck for long distance hauling, however, is a comparatively recent phenomenon. It has been fostered by the increase in the mileage of good roads, and partly by the delays and minor inconveniences incident to the shipment of goods by rail. In the eastern and central western sections of the United States, where population is dense, and where the highways are of the very best type, this movement of freight by motor vehicles has received its greatest impetus. On the Pacific coast, also, the method is in great favour, although the hauls there are generally shorter than in the east. Between the

cities of the Atlantic coast large numbers of these trucks and motor vans may be encountered, many of them running on regular schedules.

As a rule, the longer hauls are profitable only for trucks of high capacity. Trucks of one and two tons capacity are best for the short hauls of valuable or perishable goods, but for the carrying of freight between cities which are fifty miles or more apart, the large truck is found most profitable.

For this long-distance work, many American transfer companies use the five-ton GMC truck, made by the General Motors Truck Company, because this truck has demonstrated its ability to stand up well and perform efficiently under the most difficult conditions of road and grade. This truck has been used extensively in the western lumber camps for hauling logs, and also in the tank service of the Standard Oil, and of course such service is a very severe test of a truck's durability and general efficiency.

One use to which these large inter-city trucks have been put is for the transfer of household effects from one city to another. Every large city has its storage and transfer companies, organised for long-distance hauling, and the daily papers carry their advertisements regularly. Although the cost of moving household effects by these trucks is higher than by rail, the difference is more than balanced by the saving in packing costs, and the freedom from the annoyances of shipping by rail.

Looking for the Puncture.

Father was mending punctures, and his daughter, aged four, was standing by. Presently she spoke. "What are you doing, daddy?" she asked. "Looking for a puncture, my dear," said father. "But why do you keep the punctures there, daddy, if you're always losing them?" Collapse of father.

Interesting to Watch!

A North-country motorist recently came across some suspicious-looking spikes projecting from the tar in the centre of the road, says *The Motor*, and on stopping to investigate matters, startled some children who were waiting to watch the fun as various cars and motor cycles became punctured.

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The engine is of four-cylinders, cast in single block, and in addition to various other mechanical features of outstanding value all bearings are white metal lined and of ample size, so that wear is practically negligible. Every motorist knows the immense value of this.

The lubrication, ignition, steering and braking of the *Scat* will satisfy the most exacting mechanic, and afford a sense of pleasure and security to the car-owner, which is after all one of the greatest delights of motoring.

Not the least important point on which the *Scat* compares more than favourably with many other makes of cars is its low petrol consumption. This is not an empty claim, but has been demonstrated on countless occasions, as many users will testify.

The upholstering and equipment of the car are all that could be wished for, and the electrical outfit, which comprises dynamo and drive, starting motor, battery of accumulators, a cut in and cut out, switches, junction box with fuses and ammeter, two head lights, two side lights, tail light, complete electric wiring installation and electric horn leaves nothing to be desired.

Messrs. H. I. Clements Limited, 136 Darlinghurst Road, Sydney, are the sole agents for New South Wales.

DON'T SPIN THE WHEELS IN MUD.

Move Slowly and You Will Pull Out.

California's climate is a mighty equable one, and here automobilists from all over the country aver that conditions are such that touring is possible from December to December. But even in California there is a wet season when rains fall plentifully, and during this time of the year every motorist is likely to hit a spot along some country road or unimproved stretch where mud holes exist which often stall a car.

"Motorists who are out during the rainy season," says Frank O. Renstrom, Briscoe

distributor, "may occasionally become caught in mud holes along some unimproved stretch of highway or a country dirt road. The most experienced drivers sometimes err in trying to move their cars out of one of these holes.

"After experience in this kind of going I would advise the motorist, when stuck in a mud hole, not to speed up the engine and attempt to 'jump' the clutch. This will only cause the wheels to spin and dig deeper into the mud. About the only thing that is accomplished is that the hole is dug deeper, and any one who is close enough to the car is splashed in a shower of muddy water.

"It is better to open the throttle slowly and just far enough to prevent the motor from stalling and engage the clutch slowly. By this method the tyres will take hold of the ground slowly but more firmly."

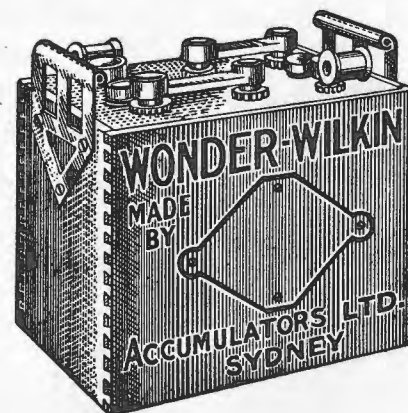
STONES PROVE TO BE GREAT HARM TO MOTOR CAR TYRES.

If the driver of a horse-drawn truck finds that his horse's hoof has picked up a stone, he does not neglect it, but stops immediately and removes the stone. He knows that to neglect the stone means serious injury to the horse and a consequent loss to himself.

Solid tyres on trucks are as likely to pick up stones as are horses' hoofs. The stones force their way into the rubber and sink deeper with each revolution of the wheel. To permit them to remain means an injury to the tyre, which will increase rapidly.

The United States Rubber Company states that the proper course of procedure under such circumstances is to remove the stone and cut away the rough edges.

With regard to cuts in solid tyres, the United States Rubber Company says that it is practically impossible for even the most careful drivers to avoid them. These cuts should be taken care of when first discovered, because with each revolution of the tyre the cut spreads a little and in time the small cut will become a large fissure extending down to the hard rubber base. This then gives rise to separation and chipping. The remedy is to trim off the edges of the small cut until, instead of a sharp cut, there is a smooth depression in the tyre.



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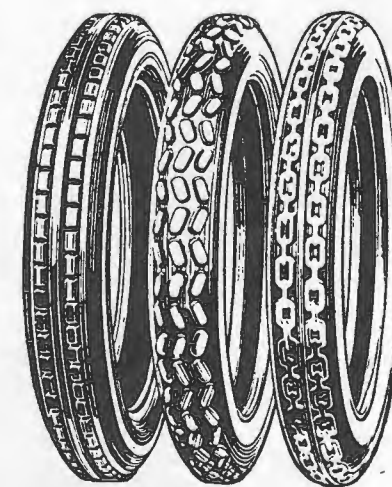
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Manufacturers,
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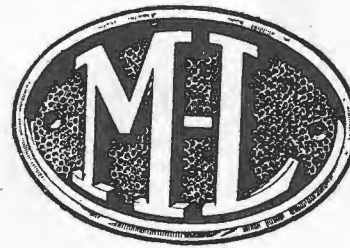
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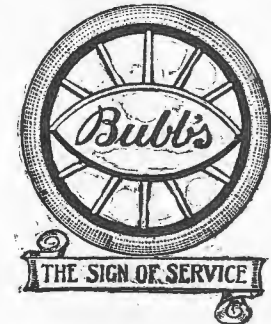
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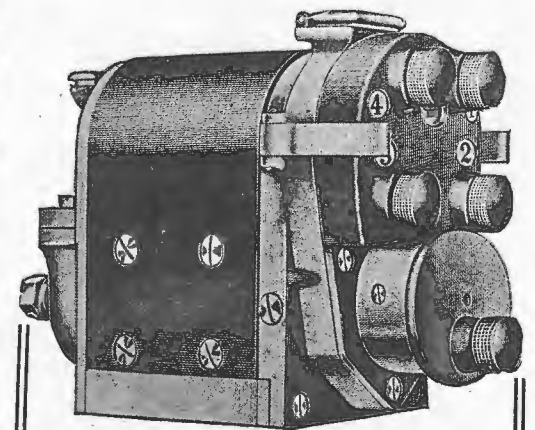
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Aviation in Australia

THE new aerial mail service in North-west Queensland, which is to link up Charleville and Cloncurry by way of Blackall, Longreach and Winton is expected to start in July next. The Queensland & Northern Territory Aerial Services Limited are the successful tenderers, the subsidy provided by the Commonwealth Government being £12,000 for the first twelve months. The passenger branch of the service will be extended as far south as Mungindi on the New South Wales border, while intermediate services will also be arranged. The company's chief pilots, Lieutenants Fysh and McGinness, have for the past eighteen months been engaged in passenger-carrying flights over the central and northern districts of Queensland and the Northern Territory, which is in itself a guarantee of their fitness for the positions they hold. The Australian Aircraft & Engineering Company is at present engaged in assembling a number of three-, five- and seven-passenger seating 'planes for use on the service.

Cheap Air Travel.

Most people have the impression that air travel is a luxury available only to those who possess a substantial banking account. This impression is fostered by a knowledge of how expensive other modes of travel were at the beginning.

Air transport is, however, a striking exception, and the fact that while it is yet in its embryo stage it is possible to hire a machine in Melbourne for a journey to the country at 2s. a mile is evidence of how inexpensive this form of travel will become in a few years when it is fully developed.

The delights of air travel, particularly in summer when travelling by land is trying and monotonous, are easy to realise. At an altitude of ten thousand feet above the earth's surface the temperature is too cold for comfort, no matter what the latitude

may be. This, coupled with the immense saving of time in travelling over long distances will unquestionably ensure a high degree of popularity for aviation in the by no means distant future.

Royal Australian Air Force.

The Royal Australian Air Force has obtained the services of Squadron-Leader Barnewell, a well-known designer of the Bristol Aeroplane Company. In his capacity as a member of the technical staff of the director of equipment his experience will be invaluable in forwarding aeronautical work in Australia. Previous to coming to Australia Mr. Barnewell spent several months in inspecting the various stations and factories of both the Royal Air Force and private companies in England, and consequently he is well in touch with all the latest developments in aeroplane construction.

Seaplane Base at Geelong.

The Commonwealth Government has acquired ten allotments, totalling about one hundred and sixteen acres, at North Geelong for the purpose of a seaplane base. The location is on the foreshore and the Navy Department has been given rights over the area by the Corio Shire Council.

The waters of Corio Bay within the sphere of operations of the base have been submitted to minute examination by naval experts. It has been ascertained that the waters are entirely free from tidal action and high seas, and because of this the area is peculiarly advantageous for use as a seaplane base.

North-Western Mail Service.

In consequence of the report submitted by Lieutenant-Colonel Brinsmead, Controller of Civil Aviation, on the north-west aerial mail route, the aerodrome at Geraldton has been removed to a piece of ground

a short distance away. This land will be compulsorily resumed as it has been found impossible to put the present aerodrome in a satisfactory condition. A small expenditure has been sanctioned on two other landing grounds, and two emergency landing grounds have been arranged for. These steps will, it is expected, make the route safe for personnel and machines. It is hoped that the service will soon be resumed, and that everything will work satisfactorily.

Round-the-World Flight.

Lieutenant J. M. Bennett, who was one of the mechanics with Sir Ross Smith in his flight from England to Australia in 1919, is to accompany Sir Ross and Sir Keith Smith in their round-the-world flight to commence in April next. At the St. Kilda branch of the Returned Sailors and Soldiers' League recently, a farewell gathering was arranged in honour of Lieutenant Bennett, who sailed for England by the *Orsova*. In responding to the toast of his health, which was enthusiastically honoured, Lieutenant Bennett explained that it was Sir Ross Smith's wish that the route of the proposed flight should not be fully published owing to the fact that two aviators—a Frenchman and an Italian—were anxious to attempt a similar feat.

Briefly, however, it was proposed to "take off" from the south-east coast of England, proceeding through France, Morocco, and neighbouring countries to Egypt; thence over the Red Sea, eventually reaching India. Japan and adjacent islands might be included in the route, and it was proposed to cross America from Alaska. The return journey would embrace New York or Halifax, the Azores Islands, Spain, and France. An engineering firm had agreed to send two vessels to sea for safety—one to be stationed between America and the Azores Islands, and one between the Azores and Spain.

On behalf of the League, Lieutenant Bennett was presented with a gold life badge of office, and the ladies' social committee handed him a gold medal.

Launching Aeroplanes at Sea.

The Royal Australian Air Force has received particulars of an interesting American experiment regarding a "catapult" form of launching aeroplanes from ships at sea. The apparatus consists of a carrier,

running on rails, impelled by a suitable power plant installed on the steamer. Experiments held to date are reported to be highly successful, but the question yet to be determined is whether the system will be suitable when it comes to launching heavy aeroplanes. It will be remembered that the *Nairana*, now in the Tasmanian service, had a curious platform built on to her hull to facilitate the launching and reception of seaplanes during her period of war service.

Future of Aviation.

That aviation in Australia has a bright future before it is the considered opinion of Lieutenant-Colonel H. C. Brinsmead, Controller of Civil Aviation. In the course of a lecture delivered at the Australian Aero Club's rooms in Sydney some time ago, Colonel Brinsmead said that the future of aviation was vastly brighter than was the case with steamships, railways and motor cars in their early days. It was only a matter of a short time until aeroplanes would become the most formidable competitors with other forms of transport. In order to prepare for that time it was necessary that trained pilots and mechanics who were still interested in aviation should be kept in training, and that facilities should be given to enable fresh aspirants to be trained. These desirable ends could only be attained by offering sufficient inducement to the investing public to second the Government's efforts. It was better for the future well-being of the industry that services should be owned, organised and operated by private enterprise, assisted by a Government subsidy, than that they should be run by the Government. The authorities had recognised this fact—hence the decision to call tenders for the aerial mail services.

Air Mechanic in Business.

Mr. C. W. Paul, who has had considerable experience as an aviation mechanic, is now the proprietor of a motor garage in Manly, New South Wales. Mr. Paul figured in a thrilling stunt at the time of the Prince of Wales' visit. While flying at a low altitude over Sydney the aviators were forced to drop into Woolloomooloo Bay. Mr. Paul was associated with the Australian Aircraft & Engineering Company, Limited, for about two years, and

during that time did a great deal of flying over New South Wales and Queensland.

Doctor's Urgent Call.

Instances are continually cropping up which illustrate the immense value of aviation in bringing speedy medical aid in outback places when the necessity arises.

One of the latest on record so far as Australia is concerned, occurred in Perth, Western Australia, quite recently, when Dr. Treathowan was urgently summoned to Carnarvon, a distance of five hundred miles, to perform an operation. Lieutenant Kingsford Smith, in a machine belonging to the Western Australian Airways, Limited, conveyed Dr. Treathowan to the spot, and after the operation had been successfully performed the pair flew back again to the Geraldton aerodrome. Dr. Treathowan has no hesitation in describing the call as the fastest in his career.

Australian Aviator in America.

American files contain references to the exploits of V. P. Taylor, the Australian airman who recently submitted an offer to the Long Beach Chamber of Commerce to give his services free in conducting an aerial exhibition for a charitable cause. More recently still Taylor wrote to the *San Francisco Examiner* and offered to give one of his eyes to a person deemed to be going blind, or to one already blind. It was the aviator's wish that his act should be regarded an "an Australian's New Year gift to humanity," and he was quite prepared to place himself, free of charge, in the hands of an oculist for the above-mentioned operation to be performed. Some years previously he made a similar offer to a member of a New South Wales sporting body, but when the matter was referred to the afflicted man's oculist he declared "it was not possible."

Aerial Survey of Launceston.

Captain F. G. Huxley, who was some time ago engaged in making an aerial survey of the Williamstown Docks, Victoria, quite recently performed a similar service at Launceston, Tasmania. The machine used was a sixty horsepower two-seater sporting *Farman*, and in spite of the unfavourable atmospheric conditions prevailing at the time of the first ascent a very satisfactory result was achieved. It was at first thought that the vibration of the

machine would adversely affect the photographs, but in spite of the fact that the plane was travelling about forty-five miles an hour at an altitude of three thousand two hundred feet, the pictures were in no way affected.

Air Service to Australia.

The recent cable messages stating that plans are being prepared for an express air service to Australia whereby planes flying day and night will reach these shores in four and a half days, have been freely commented upon by Air Force officers in Australia. What many people did not grasp on reading the cable was that the period mentioned represented "actual flying time," and that in order to accomplish same the flight would probably extend over a fortnight or more.

When the matter was referred to Lieutenant-Colonel Brinsmead, Controller of Civil Aviation, he admitted that the plan was feasible, but pointed out that the cost thereof would be enormous and where night flying was indulged in (and that would be necessary to carry out the programme mentioned), aerial lighthouses and illuminated landing grounds would have to be provided over the whole route.

Presentation to Lieutenant Shiers.

At the new rooms of the New South Wales section of the Australian Aero Club some little time back His Excellency the State Governor, Sir Walter Davidson, presented the Royal Aero Club's bronze medal to Lieutenant W. H. Shiers, A.F.M., a member of Sir Ross Smith's party on the epoch-making flight to Australia. His Excellency, in making the presentation, paid a graceful tribute to the crew of the *Vickers-Vimy*, and characterised the guest of the evening, Lieutenant Shiers, as the "captain of the fore-top."

The medal is one of four presented by the Royal Aero Club of the United Kingdom to the members of the party who figured in the great flight.

Pleasure Flights in New Zealand.

Two Auckland business men recently hit upon the novel but intensely practical method of visiting their families at a week-end resort through the agency of an *Avro seaplane*. To travel thence by boat would have involved a good deal of time and trouble, and the air trippers were more

than rewarded for their enterprise by the surprise and delight with which their families received them. According to reports received, week-end passenger flights are intensely popular in the Dominion.

Medical Aid by Air.

The Queensland Section of the Australian Aero Club is actively engaged in seeking to organise an aerial medical service for the sparsely populated areas of

Western Queensland. Charleville has been chosen as the centre of the proposed service, and the branches will extend to Quilpie, Amby, Cunnamulla, and Blackall. In order to arouse public interest in the scheme a combined meeting of the Queensland Section of the Australian Aero Club and the Royal Automobile Club of Queensland was recently held, at which the Secretary of the former body—Lieutenant H. B. Davis—explained the scheme in detail.

REVIEW OF AMERICAN AVIATION FOR 1921

CIVILIAN flying in the United States increased twenty per cent. in 1921 over the preceding year, according to a review compiled by the Aeronautical Chamber of Commerce for the Department of Commerce. Twelve hundred aircraft were operated by civilians during the last year, flying a total of more than six million five hundred thousand miles and carrying approximately two hundred and seventy-five thousand passengers. The figures are based on authenticated reports to the Aeronautical Chamber of Commerce from all sections of the country, and tend to prove that America is holding her own in the air as far as individual effort and accomplishment are concerned.

"In the last twelve months aviation has outgrown romance and is now recognised as practical art," says the review. "The year was crowded with important events, and Government, State, municipal officials and transportation experts are agreed that civilian aeronautics must be developed for peaceful transport and as a reserve arm of national defence.

"The United States Air Mail Service in 1921 made such a record for efficiency on the transcontinental route that it is recognised as a model for civilian aerial transport the world over. Letters have been delivered in New York two days after casual mailing on the Pacific Coast. The service has an average of 88.82 per cent. efficiency, that is, completed trips on scheduled time since it was started in May, 1918. The air mail has during the last year completed its wireless communications system, the fourteen stations now having radio plants, three operated by the

Navy Department and the others by the Air Mail Service. Last February, a continuous flight, with night flying, was made between San Francisco and New York. Mail leaving the coast at 4.50 p.m., February 22, was delivered in New York at 4.50 p.m., February 23. United States Mail and Curtiss planes delivered to the coast photographs of the Carpentier-Dempsey fight within forty-eight hours after leaving.

"Governors of States and heads of Federal bureaux, realising that fast transport depends upon proper terminal facilities, have started campaigns for the acquisition of municipal landing fields. Ordinances regulating aerial traffic have been passed and enforced in scores of municipalities. Almost all large cities have aerial traffic regulations. State legislatures and municipalities in passing legislation have made it clear that local regulations are temporary and designed to be superseded by the national code when it is effected. The American Bar Association, Aero Club of America, Aeronautical Chamber of Commerce of America, Manufacturers' Aircraft Association and the National Aircraft Underwriters' Association, the Society of Automotive Engineers and the National Advisory Committee for Aeronautics have recognised the necessity for a national aerial code. Their views have found expression in the Wadsworth-Hicks Bill now before Congress, providing for a Bureau of Civil Aviation in the Department of Commerce. This bureau, among other duties, will have supervision over the licensing and registration of all commercial aircraft and pilots and the enforcement of the laws.

"Among the world's records made during the year in America were those of Lieutenant J. A. Macready, of the Army Air Service, who in September reached an altitude of more than thirty-seven thousand and eight hundred feet above Dayton, Ohio; parachute drops of from twenty-two thousand feet to twenty-five thousand feet made by Lieutenant A. G. Hamilton and Sergeant Encil Chambers, of the Army Air Service; the closed course speed record made by Bert Acosta in a *Curtiss-Navy* racer at the Pulitzer Race in Omaha in

ton, Ohio. The Navy Department released four million dollars worth of flying boat equipment for the civilian market at greatly reduced figures.

"Aviation units are being organized in the National Guard in many of the States of the Union. Many improvements were made in airplane design, and in the internal combustion engine. Motors were made more reliable, more economical as far as fuel consumption is concerned, and more efficient. New types of motors are being made, including the Wright, Law-



Special Press photo.

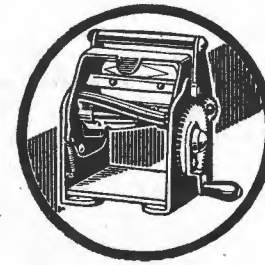
The 450 h.p. Napier-engined "Gloucester," which broke the world's speed record at Martlesham on December 19, when it travelled at a speed of 212 miles per hour, beating the previous record, which was 196 miles per hour. This machine was the winner of the 1921 Air Derby.

November, when he covered a triangular course of one hundred and fifty miles at a speed of 176.3 miles an hour—two hundred and sixty feet a second. The Loening monoplane flying yacht carried four passengers to an altitude of nineteen thousand five hundred feet over Port Washington, L.I., in August. A Martin twin-motored bomber attained a height of twenty-five thousand six hundred feet at Dayton, O.

"There were many other accomplishments, less spectacular, but no less important and significant of the rapid development and increasing importance of flight. The first American National Airway was opened by the Army Air Service between Bolling Field, Washington, D.C., and Day-

rance, Packard, etc., radial, air-cooled, and steam, and what promises to be one of the most powerful in the world—an internal combustion engine of seven hundred horsepower under test at McCook Field, Dayton, Ohio.

"Approximately a score of flying meets were held in this country in 1921. Typical of these were the races, meets and demonstrations on Long Island, in Florida; Hartford, Conn.; Baltimore, Chicago, Kokomo, Ind.; Dallas, Denver, Oakland, and Long Beach, Cal.; several in Iowa and Nebraska, and one of the most important, the American Legion Flying Meet at the national convention in Kansas City, Mo., October 31-November 2."



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OVERSEAS AVIATION

Deafness Partially Cured by 'Plane Ride.

Total deafness following scarlet fever in childhood was partially cured by an aeroplane plunge in the case of Miss Esther Devlin, aged 20, of Spokane. The young woman was taken to an altitude of 13,000 feet in a U.S. Corporation machine, piloted by N. C. Mamer. The aeroplane was put into a nose dive and dropped 10,000 feet. For the first time in thirteen years the young woman heard sounds. The whistling of the wind in the wings and guys was first audible, followed by the roar of the engine. Miss Devlin had first removed her helmet. On landing she was able to hear the pilot's voice. The cure was not complete, however, and another attempt will be made. Physicians asserted the girl's only hope for a cure was through shock. The full effect

of the long plunge was not secured, for the reason, it was asserted, that Miss Devlin enjoyed the experience immensely and no contributing element of fright was developed.

Air Service in Mesopotamia.

In accordance with plans approved a year or more ago official steps, it is stated, are being taken towards replacing the greater part of the army of occupation in Mesopotamia by units of the Royal Air Force. This will not only tend to save the Government many millions a year in expenditures for the army, but will afford a great object lesson in the value of aircraft in carrying out the almost purely police duties of an army of occupation.

A NEW SHIP AEROPLANE



Special Press photo.
The floats on the Parnall "Panther" can be inflated by means of compressed air operated from the pilot's seat. When inflated these floats are quite capable of keeping the machine and crew afloat. Photo shows floats inflated.

WIRELESS INSTITUTE OF AUSTRALIA

NEW SOUTH WALES DIVISION

A GENERAL Meeting was held on January 24, 1922, at Wireless House, Sydney, Mr. H. A. Stowe presiding.

After the minutes of the previous General Meeting were read and confirmed, the business of the evening, "Discussion and Questions on Constructional Details" was then entered upon.

Mr. Stowe grouped the subjects for discussion under three headings, *viz.*, Inductances, Capacities, and other gear and circuit arrangements. Messrs. Flynn, Blanchard, Sewell, McMahon and Stowe were the principal speakers, and discussed the various merits of bank-wound coils, flat coils, condenser details, filament rheostats, circuit details, formulæ, etc.

A simple valve circuit to use both for telephony and telegraphy in conjunction with a six-foot loop aerial on a wavelength of one thousand one hundred metres was also detailed.

Another General Meeting was held on February 14, 1922, at Wireless House, Sydney, the chair being again occupied by Mr. H. A. Stowe.

The minutes of the previous General Meeting were read and confirmed.

Telegrams and a letter from Mr. E. T. Fisk (President) regretting inability to lecture before this meeting on account of urgent business detaining him in Melbourne, were then read by the Honorary Secretary.

The election of new members then took place, and the following were elected:

Members: Messrs. A. B. Sharland, Tasmanian Tourist Bureau, 56 Pitt Street, Sydney, and O. F. Mingay, "Orwin," Kuring-gai Chase Road, Turramurra.

Associate Members: Messrs. L. G. Job, 163 Wolfram Street, Broken Hill; F. A. R. Sayers, 94 Australia Street, Newtown; J. M. S. Charleson, 43 Lamb Street, Lilyfield; S. G. Fisher, 44 Silver Street, Marrickville; G. R. Challenger, 77 Park Road, Auburn.

The election of two auditors (honorary) for auditing accounts of the year ending

March 31, 1922, was then conducted, and Messrs. E. R. Mawson and H. R. S. Callan were elected unopposed.

The Chairman introduced Mr. J. H. Dewis to the meeting, who, at extremely short notice, had consented to deliver a paper on "Dielectrics" in the unavoidable absence of Mr. Fisk.

Mr. Dewis then read his paper, which he illustrated with previously prepared diagrams (graphs). In the course of the paper he dealt with two types of Dielectrics, *viz.*, Gases and Solids.

On the completion of the paper a vote of thanks to Mr. Dewis was moved by Mr. Renshaw, seconded by Mr. Maclurcan and carried with acclamation.

Mr. Maclurcan then addressed the meeting, stating that he had manufactured a very successful "B" battery to the specification of Mr. R. P. Whitburn as explained in a paper read by Mr. Whitburn at a previous meeting. Mr. Maclurcan mentioned some slight and important innovations he had been able to introduce with great success and pointed out that the whole cost of manufacture was less than ten shillings, and the result left nothing to be desired from the point of efficiency, which was far ahead of the usual "B" battery made up of flash lamp cells. He also explained that the "B" battery as manufactured was able to be continuously recharged in the simplest possible manner, less than five minutes being necessary for the operation.

Mr. Malcolm Perry then outlined proposals for the Annual Dinner to be held at the Pekin Café on March 14 next. He also stated that particulars of the Radio Concerts which Amalgamated Wireless Limited proposed to conduct in the near future were not yet available, but that the Institute would be notified immediately they were available.

The Chairman then mentioned that the Institute proposed to conduct another competition on different lines to the last one, and that members would be furnished with particulars as soon as the conditions

and subject were decided upon. A committee had been appointed to draft same.

The Honorary Secretary then announced that if a suitable ship station was not available for the visit set down in the

syllabus for February 28, a meeting would be held at Wireless House when Mr. O. F. Mingay would deliver a lecture on "Valves as Used in Line Telegraphy Amplification."

SOUTH AUSTRALIAN DIVISION

THE 1922 session of this Division was opened in Adelaide with a General Meeting held at Alfred Chambers, on Wednesday, February 1, Mr. Hambly Clark presiding over a large attendance. The minutes of the previous meeting were read and confirmed.

A letter was received from a Melbourne firm of electrical dealers requesting a list of names and addresses of members, for the purpose of circularising. It was decided that in future firms be requested to send their circulars direct to the Secretary, who will distribute them to the members.

The Chairman announced that Mr. H. C. Coles, one of the late members of this Division who had been a hard worker for

the Institute, was about to enter the bonds of matrimony. It was moved that a letter of felicitation be sent to Mr. Coles.

Mr. Williamson, who should have given a lecture on the "Making and Use of Honeycomb Coils," was absent owing to an attack of influenza; but he kindly sent along a set of honeycomb coils, a mounting, and a Mark IV. 3-valve amplifier. Mr. Clark took the apparatus in hand and described it, giving many useful hints on the working of valves.

In view of the increase in attendance at meetings larger premises will be sought for the future, and in all probability the next meeting will be held at the Y.M.C.A. Buildings, Gawler Place, Adelaide, on Wednesday, March 1, at 8 p.m.

BOOK REVIEW

PREPARED RADIO MEASUREMENTS

WITH SELF-COMPUTING CHARTS

By Ralph R. Batcher. Cloth cover, size 9in. x 6½in., 138 pages. Profusely illustrated. Published by Wireless Press Inc., New York. Price, 15s.

A large amount of radio equipment is constructed by amateurs with the cut and dry method, and even the commercial and engineering fields are not free from users of this method. An English text-book on higher mathematics states that "Good guessing is a fine art," but not every radio experimenter is an artist, so there is a field for the book under review that is devoted entirely to simplifying the methods of determining electrical and geometrical constants for radio instruments and appliances.

The charts included in "Prepared Radio Measurements," represent formulæ that are apt to occur in ordinary radio computations. Some of these have doubtless been neglected or

account of their relative complexity heretofore, but it is hoped that with a simplified method of obtaining a solution they will become more valuable.

Charts of this type have not been used extensively heretofore in the radio field, although a few have been designed and published. They are designed to eliminate all mathematical work, except in a few cases when it is necessary to evaluate simple ratios, and require no special equipment except a straight-edge or ruler. For this purpose a transparent draftsman's triangle is desirable.

The method of operation, in "Prepared Radio Measurements," for an equation with three factors, is to lay a straight-edge across two scales at points corresponding to the known values and the answer is indicated where the same straight line intersects the third scale. This same principle is extended for charts containing four or more factors. The method is specifically described with each chart.

This book of Mr. Batcher's will therefore practically solve, with the use of an ordinary everyday ruler, most of the problems confronting wireless engineers and experimenters. On account of the scope of the work it is worthy of the best attention to everyone interested in "wireless."



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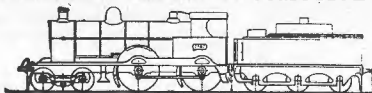
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GENERAL RADIO NEWS

London 'Phone to Holland.

THE establishment of regular wireless telephone connection between London and Holland requires only the approval of the Post Office. The plan is to lay land wires to Southwold, Suffolk, and from Vandvoort to Rotterdam and Amsterdam. The North Sea is to be crossed by wireless. Tests already have proved successful.

Pittsburgh Fire Department to Use Wireless Telephony.

Wireless telephone stations will be installed in all volunteer engine company houses in Allegheny county, and in the Pittsburgh Fire Department, it was announced by the Fire Marshal, Thomas L. Pfarr, after a station had been set up in this office and its usefulness was demonstrated.

Immediate communication throughout the Pittsburgh district and the county can be had with the wireless 'phones in case of serious fires, the marshal said. His automobile will have wireless apparatus so he can be informed of fires in any part of his district while making inspection tours.

Venezuela Builds Four Radio Stations.

Wireless stations are being erected in Caracas, La Guaira, Maracay, Valencia and the other principal cities of the country, according to an announcement of the Venezuelan Commercial Agency in New York City. The one at Caracas is to have exceptionally long range, and is to be capable of communicating with similar stations in America and in Europe. The other Venezuelan stations, a number of which are already in operation, are to be employed in transmitting official and private messages.

Importers and exporters have complained for some time of the inadequate cable facilities provided between the United States and Venezuela, and it is thought that the new wireless plant at Caracas will do much toward obviating these difficulties.

Premier Briand runs Government by Wireless.

Premier Briand, of France, who attended the Washington Conference was constantly

kept informed by wireless of French domestic affairs and important world news. Messages that had been de-coded were laid before him, among them being some from Tokio, London, Washington and Peking, re-transmitted by the French foreign office.

Dutch East Indies Wireless Service.

It is announced from Washington, U.S.A., that a commercial wireless service between the United States and the Dutch East Indies has been arranged.

Wireless Displaces 'Phone in Remote Places.

The superior efficiency of wireless as a means of communication is being more clearly demonstrated almost daily. Its latest use as a connecting link between the construction camps and headquarters of a Southern California electric company in the place of telephone lines proves the assertion. These camps are located high in the Sierra Madre mountains and present almost insuperable obstacles to the maintenance of a metallic circuit in the face of extreme weather conditions. A continuous-wave has been adopted as the standard communicating means in the installation. The masts for the antenna are tall pine trees stripped of their branches, and from this five hundred and forty metre waves are radiated. Further experiments are contemplated in which portable radio sets of twenty-five-mile sending range will be provided for temporary camps out from the main bases. Generating means of sufficient capacity and proper construction are included in the radio equipment, to ensure constant power supply for operation.

Electioneering by Radio.

For the first time in the history of electioneering, candidates were able to talk to the public without the latter leaving their homes, when arrangements were made in Pittsburgh, U.S.A., by the Westinghouse Company, to send broadcast by radio the speeches by the candidates. The nominations for mayor proved a very bitter fight in Pittsburgh recently, and radio was called into play to get the messages of the candidates to the people. In this way thousands of persons were addressed at one

time without the inconvenience of leaving their own radio sets. Each candidate for mayor was sent to the broadcasting station, where he was allowed five minutes to tell the reasons why he should be elected to the office. This proved to be quite popular, and excited a great deal of interest in Pittsburgh and vicinity.

DIARY OF A RADIO FIEND

Well, as I was saying, after a meal which was all too brief, I went with Bill to his chamber of horrors upstairs. Bill turned some knobs and said, "What station would you like to hear?" I replied, "Let's have Mars to begin with," but Bill looked mad and told me Mars was on too long a wave and had no registered hours of duty. Not only that, but he didn't speak English or use old Moore's code, and was quite out of range. Also Bill wasn't sure if there were any-one living on Mars, so I agreed to call it off. Then Bill said, "Let's try WSO," and in about two seconds I heard a lot of squeaks in my ears and Bill said, "There he is!" Bill told me the little noises meant messages to the innishated. He said he was one, so I asked him what WSO was saying. He wrote down some letters and figures and said, "He's sending German." I took his word for it, though it looked like a page from sister's algebrer book to me. Presently Bill gave a jump and exclaimed "SHUSH! Hear the ARK!" I said, "Is that really IT?" Bill said, "Sure thing, I'm not kidding," and crossed his heart. Then I got all excited and listened to a noise like you make when you twiddle two fingers on a tin whissel, only ever so much fainter. I can't describe the wonderful sensashun it gave me to lissen. There was the ark chirping away in the distance, and I thought it had been broken up years ago. "Oh! If only I could read old Moore's code," I thought, "I wonder what he's saying?" Bill didn't seem able to make it out, so I kept on thinking and imagining things to myself. "He may be ordering nuts for the monkeys, or something tasty for the kammels"; I mused, "I wonder who the operator is?" "Pretty good for Annapoliss," said Bill, breaking into my reverry. "Who's he?" I asked. "That's Annapoliss in the States," he replied. "Uses an electric ark instead of a spark or valve." "O-o-h!" I said, "I thought it was THE. . . ." "SHUSH!" exclaimed Bill, twisting a switch, "Hear that?"

This morning at breakfast I said to Pa, "Say, Pop, do you know what to-morrow is?" Pa said, "Sure; it's Thursday." Then I said, "Yes, Pop, but what IS it?" Pa said, "It's the 3rd." I said "Yes, but what important event in history happened on the 3rd?" Pa stopped buttering a piece of toast and said, "Bless us! How do I know? Let me see—didn't Ceaser cross the Delawhere, or something?" Ma broke in "hen; "Oh! Pop don't tease the boy," she said; "You know what to-morrow is." Then Pa put down his knife and lent over and patted my shoulder, looking at me just as he did when I came through the Tifoid. "There, little man," he said, "I know; you're anxious for your birthday to come. You'll be glad enough to forget it when

you are my age—it's like shaving." Ma sniffed just then and Pa stopped short and looked at the clock. "Bless us!" he said, "I've only ten minutes to make it. What shall I bring you home?" "A Wireless." I said quickly. "Bless us!" he said rolling his napkin while Ma went for his hat. "That's a large order, young man. How can I buy a—well all right—let's talk it over tonite and you can come to town with me to-morrow.

Gee, I was happy when he had gone. I grabbed Ma round the waist and danced her down the room before she knew what was happening. "I'll be a Ham, Mom," I shouted. "You'll be an orfan child!" she gasped, flopping into a chair. "What IS the matter?" So I told her all about Bill and the Ham Club and the funny little gadgets, and the queer noises he hears, and everything. Ma said she feared I'd blow the house up, but I told her Bill had had a wireless for months and his house hadn't blown up YET. Then Ma said it would cost a lot of money. I said, "Think of the fun." Finally, anyway, Ma promised she would help me talk to Pa and said I might tell Bill I was going to be a Ham. Bill was glad to hear the news, you bet. He gave me a copy of a pome he wrote. Here's the first verse:

It's easy enough to be happy
With sigs coming in QSA;
But the Ham worth while
Is the Ham who can smile
When his aerial's carried away.

NOTE.—The Editor has censored the other thirteen verses. I don't blame him. It's awful stuff. —Canadian Wireless.

OBITUARY MR. FRANK GEDDES

The death occurred on February 7, after a brief illness, of Mr. Frank Geddes, a popular wireless experimenter of Waverley (Sydney).

Mr. Geddes, well known to practically all the wireless experimenters in and around Sydney, was at the time of his death a Vice-President of the Waverley Amateur Radio Club, the members of which will feel the loss of his genial personality as much as his abilities as a keen radio enthusiast. Though only twenty years of age, Mr. Geddes had a most complete, modern and scientific experimental wireless station, particulars and photograph of which were published in the October, 1921, issue of *Sea, Land and Air*, page 556.

The members of the Radio Club paid a most impressive tribute to his memory by marching, over twenty strong, with the funeral to the Waverley Cemetery, where six of them bore the remains to the grave-side.

JUNIOR MECHANICS SECTION

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.

A PECULIAR EXPERIMENT.

AN experiment both peculiar and interesting whereby water is apparently burnt, is performed as follows:

Take an ordinary glass lamp, almost fill with water and place into it a piece of gum camphor which will float on the water.

By touching the camphor with a lighted match up will shoot a clear, steady flame which will appear to sink below the surface of the water and the flame will appear to be surrounded by the water. The camphor, which will burn for a long time, can also be placed in a large dish of water where it will have room to float about while burning.

TO MAKE INDELIBLE INK FOR MARKING LINEN.

Dissolve one and a half ounce of nitrate of silver in six ounces of liquor ammonia fortis. Add one ounce of archill for colouring, and a half ounce of gum arabic. After mixing well, the ink is ready for immediate use.

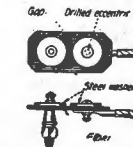
CONTACT FOR CRYSTAL DETECTORS.

Extensively used by commercial wireless operators, some wireless experimenters will perhaps achieve better results by using a variable contact on crystal detectors found to be extremely sensitive by the writer. Take a bright piece of tin and cut out a small pointer about two inches long—similar to a compass. Double the point over so that it will be narrow and blunt, with the bright side of the tin in contact with the crystal. Excellent results should be obtained.

(Contributed by E. G. Forbes.)

HOW TO MAKE A SET OF SPARK INTENSIFIERS.

Spark intensifiers serve a dual purpose as an extra equipment to a car. They will intensify the spark and cause it to fire in badly sooted plugs, in plugs having cracked porcelains and in shorted oil-soaked plugs; they will also tell the driver at a glance just what his ignition system is doing. If the spark is weak on one plug he adjusts his washers to give a spark of the proper intensity. He can also tell if one of the plugs is bad, and which one, by looking for the one without a spark. These intensifiers can be easily made and applied as illustrated.



The base of the intensifier is made of red fibre two and a quarter inches long, one and a quarter inch wide and one-eighth inch thick. Steel washers, one drilled centrally and the other drilled eccentric one-eighth inch, are mounted on the top surface. The centrally drilled washer is slipped on over the spark plug screw and clamped tightly with the spark-plug screw. The eccentrically drilled washer is clamped to the fibre with a three-sixteenth of an inch screw and nut. The washers are turned so as to make a gap between them of about one-sixteenth of an inch. The same nut on the under side holds the ignition cable. The gap can be adjusted to any width suitable for the purpose.

Any owner who installs a set of these intensifiers on his car will immediately have a better running engine and they will cause his outfit to give better service than before.

HOW TO BUILD A TESLA HIGH-FREQUENCY COIL

A Tesla coil built by the writer and described hereunder, is best adapted for use with a two- or three-inch spark coil.

The primary consists of eight turns of No. 12 S.W.G. copper wire wound round a drum. The heads of the drum are wooden rings, seven inches in diameter and one half inch thick. A round hole four and one half inches in diameter is cut in the centre of each of the heads.

Six cross bars are required two and one half inches long, three-quarters of an inch thick and one half-inch wide; these are spaced equal distances around the rings and fastened by means of brass screws.

Small grooves are cut in the cross bars to hold the wire. The wires should pass round the drum in the form of a spiral and be spaced five-sevenths of an inch apart.

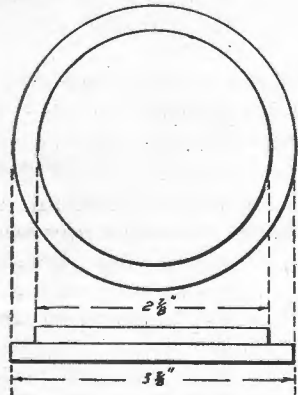


Fig. 1—The Secondary Head.

The ends of the wire should be fastened to binding posts mounted on the heads.

The secondary winding consists of a single layer of No. 28 S.W.G., D.S.C., or D.C.C. wire wound on a cardboard tube, twelve inches long and three inches wide.

The tube should be dried in an oven and then given a thick coat of shellac, inside and out. The secondary is fitted with two circular heads just large enough to fit tightly into the tube, having a half inch flange and an outside diameter of three and seven-eighths inches.

The base of the coil, made of wood, is fifteen inches long and six inches wide. To assemble the coil, place the primary across the base and exactly in the centre, two wood

screws passing through the base into the primary heads, holding it in position.

The secondary is passed through the centre of the primary and supported in that position by two hard rubber supports

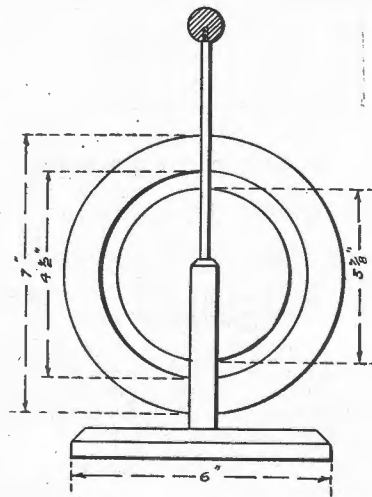


Fig. 2—End view of complete coil.

four inches high, seven-eighths of an inch wide, and half an inch thick. A brass screw is passed through the top part of each support into the secondary heads, so that a line

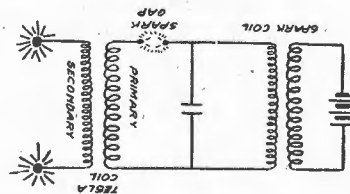


Fig. 3—Diagram of connections.

drawn through the axis of the secondary will coincide with a line drawn through the axis of the primary.

Two brass rods, five inches long, fitted with a small brass ball at one end, are mounted on the top of each of the hard rubber supports. The ends of the secondary winding are connected to the rods.

Each of the hard rubber supports is fastened to the base by means of a screw passing through the base into the support. The wiring diagram is shown in Fig. 3.

(Contributed by A. C. Cooper.)

SNAILS PROVIDE A NATURAL GLUE FOR CEMENTING GLASS.

If it so happens that a piece of fine cut glass, or any kind of glass or porcelain becomes broken, it may be easily mended in the following manner: The large snails which may be found during the summer have at their extremity a small whitish bladder filled with a greasy, gelatinous substance, which is also very sticky. If this substance is extracted from the bladder and applied to the fragments of the object which is broken, the adhesion of the pieces is so great that if one tries to separate them with a blow the object is more likely to break at some other place than the cemented seams. It is necessary to allow this glue sufficient time in which to thoroughly dry.

MAKING PLASTER CASTS LAST LONGER.

Plaster of Paris flows so freely into a mould and may be worked up readily into almost any shape, that it is frequently useful in the home workshop. The following recipes will increase its durability. The first is to dissolve boric acid in warm water, adding sufficient water to form a borate, and mix the plaster with this solution instead of plain water. The second is to dissolve one part of alum in six parts of hot water and immerse the cast in this from an hour to a week, according to its size and bulk.

QUESTIONS FOR YOUNG SCIENTISTS

This winter's crop of freshman boys and girls in a leading American High School was given a series of questions that tested their knowledge of everyday science and perhaps their sense of humour at the same time. The young scientists were asked to check the answers to the various questions that they thought correct. The wrong answers were the "howlers" of former students. The "test" was in part as follows:

You do not hear thunder until some time after you have seen the lightning because—

- (a) The lightning is closer to the earth.
- (b) The thunder is miles away from the lightning.

A mountain top is colder than a valley because—

- (a) It is nearer to the sun.
- (b) It receives less heat from the sun.

Dark coloured clothes are worn in the winter and light coloured clothes are worn in the summer because—

- (a) The dye in black makes it warmer.
- (b) Dark colours fade in summer.
- (c) Dark absorbs heat and light throws it off.
- (d) Light clothes get soiled more easily in winter.

When a street car stops suddenly the passengers lurch forward. When it starts suddenly they are thrown backward because—

- (a) It is so sudden they do not expect it.
- (b) A vacuum is formed in front of or back of the car.
- (c) The car moves and stops and their bodies do not.

You can see your breath on a cold day because—

- (a) Water vapour in your breath condenses when cooled.
- (b) Your breath turns to a liquid.

Thunder is caused—

- (a) When two clouds bump together.
- (b) Lightning causes a partial vacuum and air rushes in.
- (c) It is an echo of the lightning.

Telephone wires are stretched loosely if put up in the summertime because—

- (a) There are many storms in summer.
- (b) Snow weighs them down in winter.
- (c) They would be too tight when they contract in winter.

Science and Invention.

IT WAS A Q.S.T.!

Now Mary heard a little "ham,"
Who spoke to her by radio,
And told her how he'd love to see
The dainty little lady-o.

So Mary very soon arranged
A date by wireless phone-e-o,
And fixed the time and place where she
Would meet him all alone-e-o.

But Mary's message brought delight
To half-a-dozen home-e-os;
And Mary met, not ONE, that night,
But HALF-A-DOZEN Romeos!

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"Never get unstrung," said the telegraph line.

"Keep your tongue still," said the waggon.

"Don't be a striker," said the match.

"Have a keen eye," said the needle.

"Don't break your neck," said the bottle.

"Be sure to look things over," said the telescope.

"Don't talk harsh," said the phonograph.

"Hold tight to what you have," said the staple-puller.

"Never hum around," said the bomb.

"Always hold your temper," said the cold chisel.

"Always keep things smooth," said the plane.

"Always hold your head high," said the jack.

"Grasp at every opportunity," said the pincers.

"Always reflect on things first," said the mirror.

(Charles H. Stansburg, in *Science and Invention*.)

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There is an advertisement up at the door of every line of endeavour for the man who can make good, the man who can do the trick, the man who can get the order, the man who can take a "Message to Garcia."

Cutting prices to injure the man next door is cutting off your nose to spite your face.

Trying to find a short road to success would make good epitaphs for the vast multitudes of failures.

Nerve us with incessant affirmatives. Don't bark against the bad, but chant the beauties of the good.—Emerson.



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NOT TO BE FOOLED AGAIN

An old negro had just closed negotiations with a real estate agent dealer for a small farm and was told to bring his money to the office and get his deed.

"Yas, sah, I'll fetch the money, but I'se gwine to want yo'all to gimme a mawgage on dat land and yo'll keep de deed."

"No, John," the dealer replied, "the land will be yours without any incumbrances, and what you want is a deed."

"No, sah, what I want is a mawgage."

"Why do you want a mortgagage, John?"

"Caus' de las' piece of land I owned I had de deed and a white man had de mawgage, and de white man he took de land—yes, sah, gimme a mawgage."

NIGHT IN CALIFORNIA

By ALBERTA W. COLWELL.

The mocking bird, a song of love,
Is crooning near his nest,
In opal clouds from skies of dove,
The drooping sun seeks rest;
The mountain range, its myst'ry hides,
With amber shrouds of mist,
While valleys deep along the sides,
By cooling dews are kissed.

A velvet veil of purple dusk,
With brilliant lights aglow,
A tender breeze of scented musk,
From drowsing flowers low;
A slender spire, with cross of gold,
Seems reaching up to Mars,
A loving Presence doth unfold
With canopy of stars.

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