

SCHOLARS' CLUB BULLETIN

August, 1937

No. 1

Warmest Greetings To You All !

DEAR MEMBERS—

SINCE this is the first issue of the Scholars' Club Bulletin, and the first time that I have written a letter to all of you, it seems that we might have a few explanations. Of course, many of the boys and girls who read this are already members of the Scholars' Club, but there will be some who are not, and who want to know all about it.

First of all, the Club's badge, showing the streamlined "S" type of locomotive, is shown at the top of this page. All members of the Club are given a badge like this one. It is an attractive thing to look at, and it is something different. Besides that, the Scholars' Club is important, and the people who are wearing its badge will share in its importance.

To qualify for the Club all you have to do is take part in at least one of the tours of railway activities. While you are going over the shops or wherever you may be, you will be given a membership form, together with instructions as to what to do with it. Fill it in, and send it along, and then this paper will come to you once a month. Some 3,000 children have already qualified for the Club.

In this little paper, we have, each month, reports of the doings of the Club and its members and news of anything that's new in the Railways (there is always something interesting there). Now remember, this is the Club Bulletin. It is your paper and if you have any ideas, send them along to me. Even if you haven't any new ideas, let me know how you like the ones I already have.

Another thing. This Club would be much better for you if your nearest pals were members, so if they are not now, get them to join up. Show them this paper. If you haven't any friends (I suppose there are some boys and girls who haven't) then the Club will give you a good chance to make some. Remember, the best friends are those who have something between them, and members of the Club have this paper, their badges, and their interest between them, so they ought to be the best friends in the world.

Now if you want to write to me, here is my address: Bill Smith, c/o Betterment and Publicity Board, Railways Administrative Offices, Spencer Street, Melbourne. That's all for now—you'll be hearing from me next month . . .

BILL SMITH,

The Engine-driver.

Nothing Better Than A School Vacation Tour

THE Victorian Government Tourist Bureau organises trips to various resorts during the school holidays, specially for school children. During the last vacation in May, 1,088 bookings were made, and every one of the thousand odd people that went on the tours had a wonderful time.

With travel experts to guide them, children simply invaded Phillip Island; 388 of them came from Melbourne, 238 from Adelaide, 76 from Sydney, 19 from around Albury and 104 from around Mildura. People from all over

Let Bill Hear From You

WRITE to Bill Smith to tell him what you are interested in.

This paper can be ever so much better if you let us know what your hobbies are, what you like to do with your spare time, and what you like to read. We are afraid, though, that Bill cannot promise to answer letters, because he would probably not have time to do anything else. Driving engines is quite a big job, and he can't write any answers while he is doing it. Still, he would like to know all the members, and he would like them to know him.

"Now, how about it?" says Bill.

the place going all over the place! Parties also went to Lorne, Point Lonsdale and the Gippsland Lakes. Not long ago, 100 boys and girls had a jolly good time at Mt. Buffalo National Park, and they came from Queensland.

The great things about these tours are that there are special concession rates for children and even adults who accompany the party. Also there are trained guides appointed to take care of the parties and to show them everything that there is to be seen. They organise excursions during the day and parties, sports and games during the evenings, so that there cannot be a dull moment.

For the August holidays, the Tourist Bureau has organised another series of tours, which ought to be just as good, if not better, than the last. We know that if you have been on one, you will need no urging, but if you haven't, why not?

Scholars' Educational Tours Achieve Outstanding Success

BIG CHANCE TO SEE RAILWAYS AT WORK

ALREADY the Scholars' Educational Tours have proved a great success. Up to the present, 9,800 inspections have been made by children. In expressing their pleasure at the success of the tours, the Victorian Railways Commissioners desire to emphasise that they have been made possible only through the willing co-operation of Mr. J. A. Seitz, the Director of Education, and his staff. Perhaps the greatest help of all was the fact that Mr. Seitz agreed to the tours being held during customary school hours.

The tours are helpful from two points of view. In the first place, they give boys and girls some idea of what the Railways do. To the average person, especially those living in the city, the Railways are a few trains with some porters, guards and drivers thrown in to make the thing go. The greatest part of the State's biggest business is not very obvious. The ground crew can make or break a great airplane flight, but somehow, it never seems to attract the publicity that the pilot does. Also, there are many services which the Railways provide which people take as a matter of course. When the boys and girls are shown over the whole undertaking in the series of tours, they realise what an enormous organisation it is. It should be to them the greatest possible example of service that they could ever have.

The Victorian Railways are a State business, and all Victorians have a share in them. What better then, than that they should know their own Business?

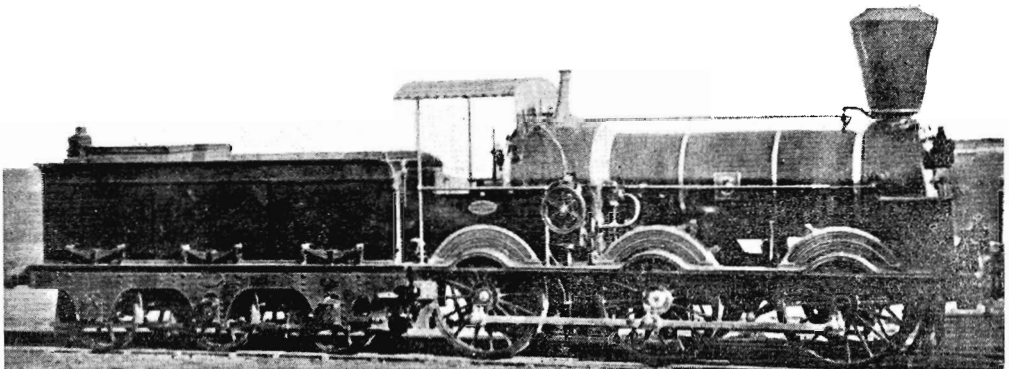
In the second place, the tours provide what is almost an industrial exhibition. There are over six hundred different occupations engaged in making the Railways efficient, and the explanations which cover most of these occupations will probably have an influence on many of the children's future.

There are ten tours in the series, covering the following locations: Newport Workshops; North Melbourne Locomotive Depot; Newport Power House; Jolimont Workshops, Substation and Lecture Hall; Spencer Street Workshops, Substation, Laboratory and Pintsch Gas Works; Spotswood Storehouse, Workshops, Reclamation Depot and Flash Butt Welding Depot; Dining Car Depot and Train Lighting Depot; Melbourne Goods Sheds; Train Control Division, Powers Machine Division, Telegraph Office and Telephone Exchange; and Printing Works.

The parties have been limited to 48 children, who are split up into two groups of 24, so that each child has a good chance to hear all that is said and to see all that is pointed out. In all the tours, more time is given to those sections in which the children are interested. The school authorities can choose which of the tours they will undertake. For instance, one party was taken over the Goods Sheds, since it was believed that the receipt and despatch of the produce would be helpful both for commercial students and for those interested in geography. Students at the Domestic Arts School have booked a tour of the Dining Car Depot, at North Melbourne, where the various activities, including the butchery and the bakery will be specially featured. For Technical School pupils, doing blacksmithing, tinsmithing, woodworking, etc., there are the various shops and mechanical processes to be seen.

These tours provide children with a wonderful opportunity to see the Railways at work. Those who have been will be able to see easily the meaning of the great Railway slogan: "Help Us To Help You."

VICTORIAN LOCOMOTIVES — PAST AND PRESENT



To introduce this regular feature—"Victorian Locomotives: Past and Present"—we have pleasure in presenting "Puffing Billy." As such, he was fondly known when he started in the Victorian Railways service away back in 1860. He was

scrapped 61 years later, and had then run 1,257,136 miles! Seeing the huge engines of today, especially those with modern streamlining like the Pacific "S" class, "Puffing Billy" was a very little engine indeed. Still he had an eventful career, and did his duty nobly

The Path of Energy Explained Here

HOW SUBURBAN TRAINS ARE OPERATED

THE power which is used for propelling the electric trains of the Melbourne Suburban Railway System is generated by the Railways Department's Electric Power Station at Newport. About 650,000 gallons of water per day are evaporated into steam in the twenty-four boilers installed in the Power Station and about 460 tons of coal are required for fuel.

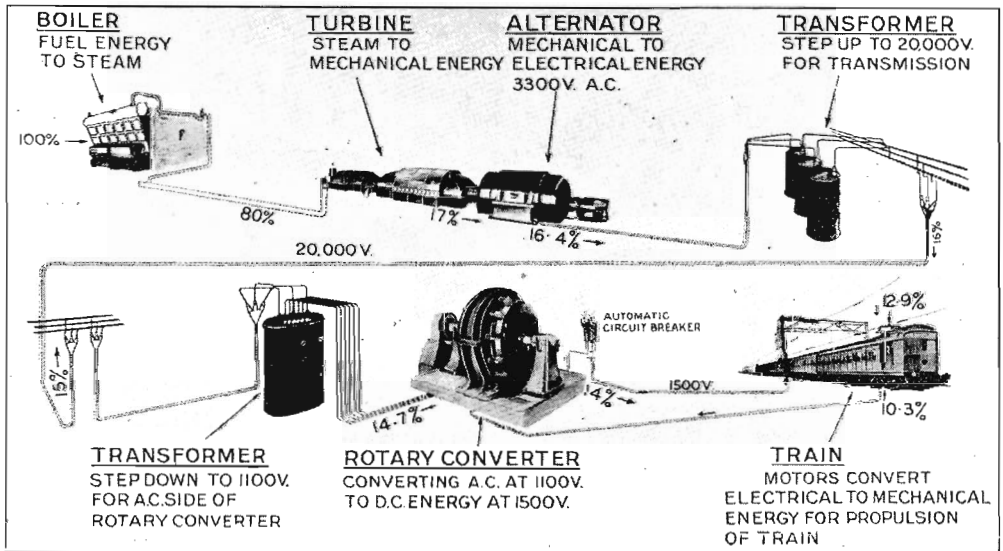
The steam energy is conveyed by pipes to turbines where it is converted to mechanical energy. Coupled to the turbines are alternators which, in turn, convert the mechanical energy to electrical energy at 3,300 volts alternating current.

The electrical energy from the alternators is fed to transformers known as "Step-up"

transformers. These increase the voltage to 20,000 volts, at which pressure the electrical energy is fed on to the main busbars of the Power Station. From these busbars the electrical energy is transmitted by means of 141 miles of steel armoured underground cables and 152 miles of overhead transmission lines to 23 traction substations throughout the Melbourne suburban area.

At the substations, electrical energy is converted into direct current at 1,500 volts, in which form it is suitable for traction purposes.

Conversion is carried out in all the substations, except four, by rotating machines known as Rotary Converters. In the four substations referred to, which are located in the outlying areas, stationary mercury arc rectifiers are used.



All the substations in the inner areas are manually operated, but those in the outlying districts have been designed for automatic control and are run unattended, all switching, starting and stopping operations being performed by automatic relays. Protection against all mechanical and electrical faults is provided by the same means.

The path of electrical energy when it reaches a substation by underground cable or overhead transmission line is as follows: The energy is fed through suitable switches on to the 20,000 volt main busbar, which is a solid flat copper conductor. From there it is fed through switches to a transformer which reduces, or steps down, the voltage from 20,000 to 1,100. At this latter pressure it is fed to the alternating current side of the Rotary Converter. This machine converts the alternating current to direct current at 1,500 volts and the energy flows through an automatic high speed circuit breaker on to the 1,500 volt direct current positive busbar.

From this busbar the electrical energy passes through various section circuit breakers and isolators into short lengths of underground cable which convey it from the substation out on to the overhead conductors which are suspended over the railway tracks from steel structures or wood poles.

By means of the pantographs which are provided on the roofs of all motor coaches, the electrical energy is collected from the overhead conductors and passed to motors which are erected on the underframes of the cars and geared to the wheels. In this way the trains are propelled.

After passing through the train motors to the axles, and through the wheels of the motor coach to the track rails which are bonded together, the energy returns *via* a cable to the negative busbar of the substation and from there to the negative side of the Rotary Converter, thus completing the electrical circuit.

A Story for the Younger Members—



FIRE ON WHEELS



MOST boys and girls have read a story that began "Once upon a time . . ." and this one could almost begin like that. However, it is a true story, although it happened over one hundred and fifty years ago now. In those days, in England, life was very different from today, because most of the wonderful inventions which we have now were made since then.

In what we call the eighteenth century, and about 1780, there were no railways, as we know them now, no motor cars, but only carts and carriages and coaches pulled by horses. The roads were not made of metal as we know them, but were simply tracks or hard earth, as you sometimes find in the country districts. The reason why they were not very good was that there was no one to take care of them, and all the horses and carts running over them soon knocked big holes in them, which were soon filled up with rainwater and mud.

If any ladies wanted to go visiting, they had to ride on horseback for the most part, especially if they lived in the country, as most people did then. When time passed on and there were more people travelling about the place on business, everyone saw that they would have to do something about the roads, or at least see that some form of transport was provided. Then some bright person got the idea of "Toll Gates," and they were soon built all over England. The idea was quite simple. If you wanted to use the road, then you would have to pay for it, just as you pay your fare to travel by train now. The money which was collected was used to pay men to keep the roads in order. The toll gates were big gates set across the road, and kept locked, with a toll house beside them. In the house lived the toll-keeper, and if you wanted to pass, you called out to him, and paid him to open the gate.

Our story is about one of these toll-keepers. He was an old man, as most of the toll-keepers were, and he lived in a far away part of the world where there were few travellers. One night Old Dick (for that was what he was called) opened the gate to let the mail coach through, and then went into his kitchen where his wife was cooking his supper.

"It's a cold night, Mary," he said, "and not a night to be abroad." Most of the people of his district were very superstitious, and believed in fairies, and evil spirits, and all that sort of thing. "I trow there'll be few at the toll-gate tonight."

"The more good," said his wife crossly, "we'll be able to get some good sleep with no interruptions."

So they had their supper, and sat before the fire warming their feet and watching the embers fall. Then the old man yawned, and they retired to bed quite early.

They had been asleep, when the old man woke up, and heard a most terrible clatter and banging, then a hissing, and then the sound of the horn that was used by the mail coaches to warn him of their coming. Frightened already, Old Dick pulled on some clothes, and went out to his gate. There coming up the road, was a terrible monster, a huge thing that jolted and rolled and roared, with steam and smoke hissing and blowing, and with the red glow of fire at the back of it! And a thing that looked like a man was sitting on it, waving to him! Never

had the old man opened his gate as quickly as he did that night!

"Drive on, Mr Devil!" he cried, "There is nothing to pay!"

Then he ran into his house, crawled under his bed, and said to his wife "Shelter with me, Mary, the Devil is abroad tonight!" So the two poor old people stayed under the bed all night, and for a long time, went around with a fearful look on their faces and shaking in their shoes. To their dying days they believed that the Devil had ridden by them that night.

* * * *

What did they see? Well, that is very simple. Several men even in those times, had had the idea that steam could be made to do work, and there were some steam engines made that drove pumps and did jobs like that. One gentleman, who had a lot of money, and who could afford to experiment, built a steam locomotive, but instead of running it on rails, he ran it on the roads. Every time that he went out with his invention during the day he frightened horses and cows and men and women, so he took to going for drives during the night, and it was he that frightened the old toll-keeper. Little did the old man know that the thing which he thought was the devil was going to become one of the greatest things in the life of men. Here in Victoria, we have a Railway organisation which has grown with the State, and which has helped us more than we know. Perhaps, if he had known that, he would not have run so quickly

August School Vacation Tours

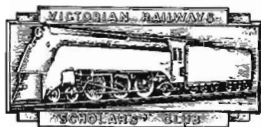
- Planned to offer the maximum of pleasure and interest, these tours are in charge of experienced Escorting Officers who arrange sight-seeing, games and evening entertainments a trained nurse also accompanies each party.

Memorable School Vacation Tours have been arranged to the Gippsland Lakes, Cowes (Phillip Island), Point Lonsdale and Lorne.

- Specially Attractive All-inclusive Fares for Children, also Adults desiring to join the tours

Accommodation Rapidly Filling
BOOK NOW!

For further details, consult the Victorian Government Tourist Bureau, Queen's Walk, Melbourne (Branch Office, Spencer Street Station).
Telephone, Central 2042



SCHOLARS' CLUB BULLETIN

September 1937.

No. 2

One of the World's Busiest Stations!

**"Here's My Second Letter,"
Says Bill Smith**

**OVER 2,100 ELECTRIC
TRAINS A DAY**

DEAR MEMBERS,

WELL, I am very pleased to have heard from so many of you. I must have had hundreds of letters—so many indeed, that I have had to take them to work with me, and read them while the cleaners were on my engine, and at all sorts of odd moments.

As many of our members collect stamps as a hobby, we are commencing in this issue a series of pictures of stamps which feature railways in some form or other. It seems to me that if you collect stamps, and you are also a member of the Victorian Railways Scholars' Club, you ought to be able to arrange some exchanges with other members.

* * *

The story in last month's issue was also very popular, judging from the number of nice things that were said about it, so on the back page of this issue you will find another one. I hope this one will be liked as much—it is a story of the days when men wore furs and hunted with pieces of stone.

Most of our readers have received their membership badges, but those members whose schools have been closed for the time being will be supplied with badges when their schools reopen.

* * *

Since I have been connected with this Club, I have made friends with Nancy Lee and Nicky, of 3AW's Chatterbox Corner. I heard them the other night talking about the Bulletin, and they mentioned me! They often have a lot to say of interest to club members, so I suggest that you listen to them, if, of course, you are not one of their many listeners already.

Well, you had all better get on with the rest of the Bulletin. Don't forget to write, even if it is only to say that you have read the Bulletin. If you have any ideas, shoot 'em along. I must get along and take my loco. back to the shed, so you'll be hearing from me . . .

BILL SMITH,
The Engine Driver.

P.S.—My address (in case you have forgotten it) Bill Smith, c/o Betterment and Publicity Board, Railways Administrative Offices, Spencer Street, Melbourne, C1.

WHAT station? Flinders Street Station, of course—one of the busiest single passenger stations in the world. Yes, in Melbourne, we have this station, so let's find out something about it.

There are 16 platforms altogether, and No. 1 platform is one of the longest in the world. It is 2,027 feet long. And how busy they all are, about half past five, when thousands are anxious to get home to their dinners. Throughout each week day over 2,100 ordinary electric trains leave the platforms, and the seven-car trains can each carry about six hundred people. Besides these trains of course, there are the steam passenger trains, goods trains, and special trains for various purposes.

Between half past eight and nine o'clock in the morning, 60 to 70 trains arrive at Flinders Street. This means that more than two arrive every minute, and that in the half hour, about 40,000 people arrive in the city. And even 10,000 people take some handling.

Fruit Drinks Record

On one day, 13,000 customers were served with fruit juice drinks at the drink stall on the Swanston Street Concourse. What a thirsty day that must have been!

The Railways Nursery is on the second floor of this huge Station. It was opened in 1933, and since then over 55,000 children have been there. There are bookstalls, tobacco stalls and telephone booths all over the place, besides all the booking offices, luggage rooms, parcels offices and cloak rooms, and all of them have to be attended to.

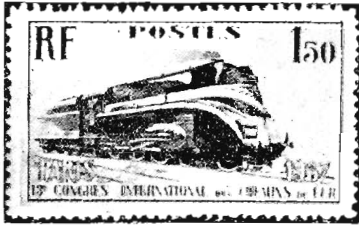
We haven't forgotten the Man-in-Grey. He knows everything, for that is his business—which platform the trains leave from, when they leave, what the fares are, where to go to find anything, and what to do to get anything. People ask him some very funny questions, but he always has an answer ready.

Next time you pass through Flinders Street, keep your eyes wide open. Things happen in this, one of the busiest passenger stations in the world!

More Than 600 Different Railway Occupations

RAILWAYS FEATURED ON NEW FRENCH STAMP

TO commemorate the thirteenth international Railway Conference and the 100th anniversary of the French Railways, the French Government recently issued two special stamps. The one pictured is marked 1 franc 50 centimes, and shows in blue a streamlined locomotive full steam ahead. The other stamp is green, shows an electric train, and is marked 30 centimes. Both of these are obtainable in Melbourne for a small cost.



NEW ALL-STEEL TRAIN WILL BE PRIDE OF VICTORIA

THE pride of the Newport Workshops just at the moment is the new set of steel cars which is being made for the Melbourne-Albury section of the Sydney express service. The new carriages will be given a distinctive color design—royal blue with two gold stripes running from end to end of the train.

One of the features of the new train is the careful consideration given to the planning of the kitchen for the dining car.

An entirely new form of air-conditioning will be introduced. Fresh air will be drawn through the filters at the kitchen end of the dining car, and the flow into the kitchen is controlled, so that the staff can please themselves as to the temperature they want, regardless of what it is like outside.

And the thing is that the kitchen is to have a new type of stove, which will burn anthracite coal, a very slow burning type of fuel. This will provide a very hot oven without making the kitchen itself excessively hot. The stove burns about 10 to 15 lb. of coal each day, and that only amounts to about two tons a year, so that the saving will be substantial.

SOME UNUSUAL POSITIONS

If you were ordered a job in the Railways, what do you think that you would be doing? Well of course, if you were a girl, then you would hardly be driving an engine, but apart from a few things like that, you might be doing almost anything. There are over 22,000 employees in the Victorian Railways altogether, and they do almost anything. If they were all wrecked on an island, they could soon have a real little town going, for among these people there are over six hundred different occupations.

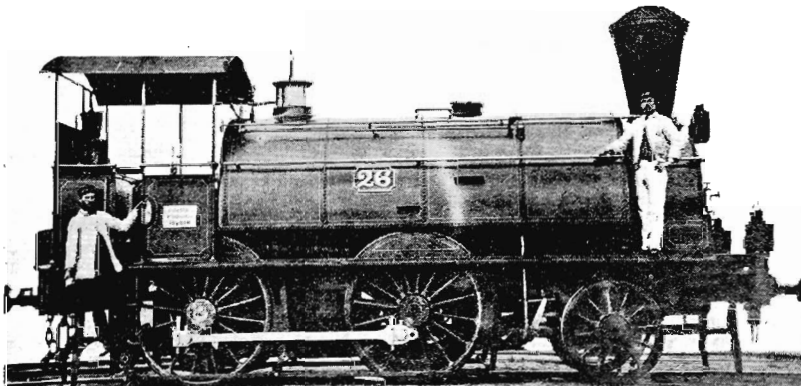
Besides the people we all see when we travel by train, the porter, the booking clerk, the guard, and so on, very few know that there are also doctors, lawyers, chemists, dietitians, detectives, photographers, architects and printers.

There are also nurses—one in the first-aid room at the Newport Railway Workshops, several in the Children's Nursery at the Flinders Street Station, one at The Chalet at Mt. Buffalo National Park, and also those who accompany the Scholars' Tours during the school vacations.

Although many of these people seem to have only a small connection with the general idea of Railways, they are all very necessary. Commencing with next month's issue of the Bulletin, we will each month give a short outline of what some of these people do. Of course, we will not be able to cover the whole six hundred occupations in a short time, but we will be able to give some of them. Watch out for the "What I Do" series in next month's issue.

Train in Dining Room!

ONE of India's wealthiest nobles, the Maharajah of Gwalior, would seem to be a railway enthusiast, too. On his great dining table, he has a model train made of silver, and operated by electricity, which travels slowly round with its truck filled with food and wine. If you reach and take a dish from it, it stops automatically until you return it, and then goes on. Well, that's one way of eating, but there are many of us who would, I think, prefer that the dish of cream puffs stayed in front of us!



This was one of the first locomotives to be used on the Melbourne suburban lines in 1860. It ran between Melbourne and Williamstown.

PINTSCH GAS MAKING FOR RAILWAY CARRIAGES IS INTERESTING PROCESS

THE manufacture of Pintsch Gas is one of the little known activities of the Railway Department. Prior to the electrification of the Melbourne suburban lines between 1919 and 1923 all the suburban trains used Pintsch Gas as an illuminant. Up to about the same time practically all the country main line and branch line trains were also illuminated by Pintsch Gas. Most of the main line country trains are now electrically lit from batteries carried on the under-frame of the cars, these batteries being kept charged by generating sets driven from the axles of the cars.

There are, however, still approximately 600 cars in use on the Victorian Railways which use Pintsch Gas for lighting purposes. About 100 of these cars are equipped for both electric and gas lighting. These cars normally run in the Melbourne electrified service, electrically lit, but at the Christmas to New Year and Easter holiday periods they are transferred into use on country lines when they are lit by gas.

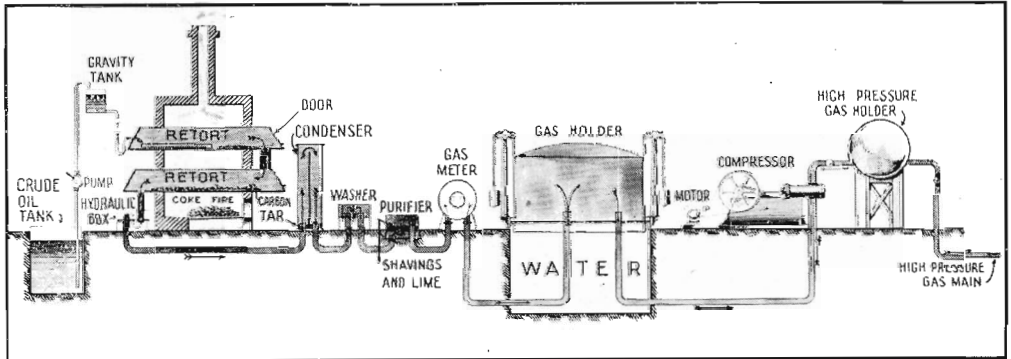
Pintsch Gas, which is a German process, is not a coal gas, but is made from crude oil. Its chief advantage over coal gas is that it can be stored under high pressure and, therefore, it requires much less space than ordinary gas.

When it is remembered that the gas has to be transported to country centres in travelling gas storeholders and that it has to be carried in

holders on the under-gear of each carriage, the advantage of using a highly compressed gas will be apparent.

The process of manufacture of this gas is as follows:—The crude oil is delivered in travelling oil tanks from Port Melbourne and is pumped from these travelling tanks into underground storage tanks at the Gas Works. From these underground tanks the oil is pumped as required into a tank in the Retort House near the roof called the Gravity Tank, from which it flows through pipes to the retorts.

These retorts are cast-iron boxes the end doors of which are sealed and they are heated by a coke-fired furnace as shown in the illustration. The oil flows on to the trays of these retorts, the rate of flow being regulated according



to the heat of the retort. Under this intense heat the oil turns into gas, and after passing through the top retort it goes on its way through the bottom retort, then through a pipe (known as a descension pipe), and through an hydraulic tank to the gas main.

When the gas reaches this main it contains certain impurities such as tar, sulphur and ammonia and it has to receive further purification before it can be used. So it is then passed through three cylinders known as condensers where most of the tar and heavy matter is trapped and carried away through drain pipes.

The gas is not yet pure, so the next process is to wash it in a cylindrical apparatus (known as a "washer" or "scrubber"). The method of washing the gas is to allow it to bubble through water which catches other impurities. From the "washer" the gas passes along a pipe to a box-like tank known as a purifier for the final stage of purification. This purifier contains three layers of lime and shavings each about 2 in. thick and laid on a tray made of basket work. The gas percolates through this mixture and leaves it pure and fit for use.

From the purifier the gas passes through a meter (something like the gasmeter in your home

but on a larger scale) where the quantity of gas made is recorded. The gas then passes to the gasometer where it is stored. This gasometer rises and falls according to the quantity of gas stored and each foot in height above the water seal represents 50½ cubic feet. The water round the gasometer prevents the escape of gas as the gasometer moves up and down with a telescopic movement.

Pipes lead from the gasometer to the gas compressors which draw the gas by suction and compress it, and then deliver it through smaller pipes to the high pressure storage holders. The pressure in these holders is 165 lb. per square inch.

From these holders underground pipes lead to Flinders Street and Spencer Street Stations. When gas is required on a train flexible rubber hoses are connected between the underground pipes and the carriages, a valve is opened, and the gas allowed to flow into the storage cylinder underneath the carriages, and thence through the necessary pipes to the lamps in the roof.

At certain centres in the country, Pintsch Gas storeholders have been erected to meet the requirements of trains which run on branch lines and do not normally come to Melbourne.

A Story for the Younger Members—



THE MAN WHO WAS LAZY



THERE was a time, you know, when men were very very savage, rather like a cross between the Australian natives of today and the cannibals we read about in books. In those days, apart from a few implements like stone axes and perhaps a few rough dishes, men did not have anything at all worth owning. They wore the skins of animals, roughly pulled together so that they could be protected a little from the rain and the sun. They had no definite homes. They lived on what they could catch, and when game got scarce, they had nothing else to do but to pack up and move to a place where it was more plentiful.

Among one of the groups that lived in this way, there was a young man whom they called Butak—he was only a boy really, but when you were sixteen you were quite grown up in those days.

This young man had a name for being lazy, which had stuck to him since one of the old women of the tribe had seen him picking up a stone with his feet because he couldn't be bothered bending down for it. I don't think that he was very lazy, but he certainly did not like work.

One day the tribe came upon a cave which was in a very good place for a home. The only trouble was that there were several big stones which were blocking the entrance, and which made it difficult to get in or out. So the men of the tribe got together and they all pushed and pushed and pushed, but they could not move it. Then one of them noticed that Butak was not even trying with the others, but stood idly on one side and looked on. He called to him.

"Ho, Butak, come and lend your shoulder with the others. This stone is heavy and hard to move."

"You will never move it," said Butak, saying the "you" very loud.

"Then I suppose you can, lazy Butak?" the man wanted to know.

Butak looked mysterious.

"With the assistance of two men, I will move that stone wherever you want it," came the calm reply.

"Did you ever hear the like?" laughed the other, and hurried over to tell the rest, so that they could enjoy the joke as well.

Then one of the older men stood up and said:

"It seems to me that since Butak is a boaster as well as being lazy, that he should be made to move the stone with the assistance of two men."

There was a great shout, and all the tribe laughed to think of Butak's shame when he could not move the stone. But Butak only smiled.

"Hi, Atkai, and you, Mori, you shall assist me."

He took the two men with him, and talking quietly, told them what he was going to do. The rest of the tribe went about their business, for when you have to make your own furniture as well as moving it in, there is always a great deal for everyone to do.

Meanwhile Butak and his men had gone into the forest, and soon returned with a great variety of saplings, which they had stripped clear of all their branches. Taking no notice of what anyone else was doing, they calmly proceeded to move the stone, and this is how they did it.

First, they dug a hole under it, and into this hole, they were able to push the end of a sapling. Then, with a piece of wood under the sapling, they put all their weight on the far end, and so were able to lift it just a little. Butak, who was standing ready, then popped another piece of wood under the stone, and so they took away the big piece with which they had lifted it. Then they went around the other side, and did the same thing, and so on, until the big stone was right off the ground.

"But what use is that?" cried the onlookers. "You have still not moved the stone." But still Butak only smiled.

Taking a nice round sapling, he cut it into shorter lengths, and placed them next to each other under the stone, so that they acted as rollers. Then, with one man behind to pick up the rollers as he passed over them, and another

WILL YOU . . ?

The following members desire correspondence as under:—

Gwen. Price, Railway Station, Montmorency, wishes to exchange stamps.

John Liston, 142 Osborne Street, Williamstown, W6, desires to correspond with members interested in engineering.

Vic. Bradley, 156 Pakington Street, Kew, wants to correspond with boys 12 to 14 years of age.

man to lay them in the path of the stone, he was able to push the stone away alone!

There was great consternation among the people who had jeered at him before. Then the man who had started all the trouble said—

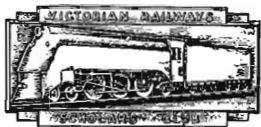
"Well, Butak, we all laughed at you, and we all thought you lazy, but I think you should be called the Clever."

And so as long as he lived (and that was a long time, you may be sure, for Butak always took good care of himself) he was always called "Butak the Clever."

* * * *

All that sounds very well, but was he clever? Well, today, we would hardly think so, but when you come to think of the times when he lived, then it is different. When Butak was alive, there was no such things as wheels, for the very good reason that no one had thought of them.

What Butak thought of was the forerunner of the wheels, for it was not until rollers had been used for some time that some bright person thought of only using one roller, and attaching that to the thing that had to be moved. And think where we would be without wheels. Try and imagine an engine without them, or a motor car without them. Try and imagine anything almost without them You can't do it.



SCHOLARS' CLUB BULLETIN

October 1937.

No. 3

At Home With The V.R. Locomotives

"EAT 300 TONS OF COAL A DAY"

YOU can see engines at work always—all sorts of engines, and all sorts of work. Do they ever get a rest? Yes, they do, and many of the engines of the Victorian Railways are at home at North Melbourne. Let's go and have a chat with one of the loco's, and let him tell you how he is treated

"In the first place," he says, "I want you all to remember that I am not one of those modern streamlined express engines. I am a plain common-or-garden tank locomotive, and I spend all my time pushing and shunting carriages and trucks around the Melbourne Yards. So you don't want to think that I am not important. I'm one of the engines that work behind the scenes.

"Naturally, I have to be fed, and my only food is coal, with water and a little oil thrown in. We all live up beside a big machine which fills our hoppers with coal in a few minutes. I believe that the coal comes from New South Wales, and from Wonthaggi, and is put into the machine by an electrically driven arrangement which shovels it all in without any men having to handle it. A fireman once told me that between the lot of us we get through 300 tons of coal a day. He ought to know, for it is his business.

20 Tons of Kindling Wood

"They light our fires first thing with kindling wood, you know, just like any other fire, and even that takes a lot of wood—something like 20 tons a day.

"We don't have the same drivers every day. In fact, we have a different crew almost every time. There are over 800 men whose business it is to take care of us.

"When the men come in to work, they go to a big notice board in the shed and look up what they have to do and what train they are to use. They go over to another board which tells them where we all are, for there are a lot of engines in the shed, and if you didn't know, it might take a long time to find any one. There are about 160 of us altogether in the shed.

"We have electrically operated turntables to turn us round, but of course, some of the loco's are too big to fit on to them, and have to be taken out to a loop, which is a circle in rails, and so they are turned around that way.

"Turning trains round is rather a big business, and I have to put in a lot of time doing that. Of course, not all trains have to be turned round, and some are done quite simply. For instance, 'The Sydney

DEAR MEMBERS—

THE Scholars' Club seems to be well established, doesn't it? I was going home from work the other day when I met two boys who were wearing the Club badge. Without telling them who I was, I asked them what the badge was. They told me all about it and were highly enthusiastic about the Bulletin.

It seems that all their friends were members, and that they all got together and formed a sort of a branch club in their district. Of course, being kept at home for some time stopped their meetings, but now they are out and about again, and the branch is thriving.

In this month's issue we have another story—this time one of modern times. This story should be read by all members, for it contains a valuable lesson.

Inside there is the first of the "What I do" series, telling all about some of the people who work in the Victorian Railways. This series will be continued in the next issue.

Now that seems to be all for the present. This is the October number of the Bulletin, so it won't be long till the end of the year and Christmas holidays. It is almost time to begin to think of what presents will be coming your way. I hope they're good ones!

Till next month . . .

BILL SMITH,

The Engine Driver.

Limited' would take a long, long, time to turn if we were to do it carriage by carriage; instead of doing that, the whole train is taken around the loop, and comes back in a short time facing the opposite direction.

"If something goes wrong with my inside, I have to be treated for it. The driver can always tell what the trouble is, and so he simply passes me over to the mechanics, who fix me up again. When a driver has finished his day, he has to fill in a card with a report of my behaviour, so that the next driver that I have will know all about me. In this way, also, they are able to keep a check on all the repairs that I have had. The driver, before he starts his work, has to carefully look me over and see that I am all right.

"Sometimes I wish that I was a loco. of the kind that speed along the rails at 70 miles an hour, the kind that people wave to when they see it passing by, but I don't know I may not be beautiful, but I get plenty of variety, and I know that I am useful"

— Here the tank loco. gave a sigh, coughed some smoke, and passed on over the points.

V. R. DIETITIAN TELLS OF HER VARIED DUTIES

IN the introduction to this series in the last issue, we pointed out that we could hardly cover every position connected with the railways. For this reason, we propose to deal, for the first set at any rate, only with the jobs which are unusual, unexpected, or unknown. In this connection, we can do no better than discuss the duties of the Dietitian and Welfare Officer (Miss B. Wilmot, B.Sc.).

"In a position like mine," Miss Wilmot says, "the number of different people with whom I work is surprising. Two examples come to mind: the air-conditioned Buffet Car and the remodelled Main Fruit Juice and Milk Drink stall at the Flinders Street Station. In both those cases there were numerous occupations represented, and to see the Buffet Car and the Drink Stall is to gain a true appreciation of the skill of the men who designed and constructed them."

In both of these cases, Miss Wilmot was employed to advise on the lay out of the equipment, so as to make the work easier for the girls who serve the drinks and the food.

Broadly speaking, Miss Wilmot's duties are food selection, food storage, food transport, and food service. That, of course, is most important, particularly when you think of the State-wide refreshment services of the Victorian Railways and the thousands of people who patronise them every week. As Welfare Officer, one of her main duties is to see that the working conditions of the girls are as congenial as possible.

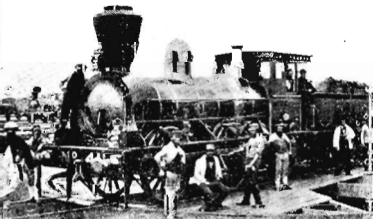
In recent times, the Railways have sold more and more milk, and in the last financial year 150,000 gallons were used. This commodity alone takes up much of Miss Wilmot's time, for in the interests of the public, a great deal of attention must be paid to the handling and storage of the milk.

Miss Wilmot is a Bachelor of Science at the Melbourne University, and she is well qualified to conduct her various tests of quality and purity. Upon her appointment in 1934, she undertook a 12 months' course in the Dietetic Kitchen at one of Melbourne's leading hospitals. She also attended a College of Domestic Economy, qualifying in cooking.

She has an experimental kitchen and laboratory adjoining her office, in which food samples, particularly milk and butter, are tested regularly.

Besides all this, there are menus. The department does not cater for special diets. The menus are arranged to provide a sufficient variety to cover all tastes, and to give a well-balanced meal.

PAST AND PRESENT LOCO'S—No. 3



One of the "O" class (No. 41) which began running in Victoria in 1863.

Meet One Of The "S" Class Loco. Drivers

HERE is Driver George Lynch, of Wodonga, who is one of the drivers of the streamlined "S" class locomotives, but . . . He is also a shorthand writer and typist; a roneo machine operator; a V.R.I. Instructor in Engine Working and Westing-



house Brake at Wodonga; a talented musician (he plays 14 or 15 instruments); a second cousin of the famous Lynch Family of Bellringers, and, finally a ventriloquist . . . To shorthand, George says he owes his knowledge of locomotives. While attending the Victorian Railways Institute Classes in Engine Working and Westinghouse Brake at Flinders Street 21 years ago, he simultaneously took on a course of shorthand—and soon he was taking "precious notes of the Instructor's lectures." When, in 1925, he was appointed an Instructor, he recognised the value of his students possessing written explanations of his own lectures. Hence, typewriting lessons followed, then the purchase of a roneo duplicator; and ever since his class has had the benefit of "papers" dealing with all the subjects he teaches—written, typed and run off on the duplicator by this very proud driver of the streamlined "S" class locomotive. At the Institute examinations, George has won four gold medals for Engine Working and Westinghouse Brake; his pupils have also gained many successes. Known to hundreds of railwaymen who have chuckled at the highly diverting situations he has figured in as a ventriloquist, George has "thrown" his voice into, under and over all kinds of unexpected places. But the furthest he has projected his voice occurred recently when, in a 15-minute interview on his work as a locomotive driver, he spoke into the microphone at 3UZ.

Finding Names for 300 Railway Carriages Was a Big Job

THE problem of finding names for the carriages has proved so difficult in recent years, that the Pullman Company of America has recently established a special committee to deal with the matter. There are more than 8,000 Pullman cars all told, and they are all named, so the difficulty is understandable. Not long ago, the Company

THESE MEMBERS WANT TO HEAR FROM YOU!

The following members would like to correspond with other members interested in stamp collecting:—

George Scott, 56 Seddon Street, Seddon, W11.
Doris Jenkins, 166 Osborne Street, Williamstown, W16.

Alan Wrigley, 120 Osborne Street, Williamstown, W16 (English and Australian stamps to exchange).

Joyce Squires, 190 Park Street, South Melbourne, SC5.

Russell McGill, 12 Nyora Street, East Malvern.
John Mitchell, 66 Walker Street, Dandenong.

Ray Owen, 101 Manning Road, Malvern East, desires to hear from members interested in model aeroplane building.

Frank Milburn, 48 Little Page Street, Albert Park, SC6, wants a pen pal.

took over the cars of the Wagner Sleeping Car Company, and 300 cars had to be renamed. An official took an army of clerks with him to the Chicago Library, and from Greek and Roman history came the 300 names. For the most part, though, names are those of birds or flowers, with some girls' names.

How High Speed Trains Have Altered Design and Maintenance of Tracks

THE ever-increasing demand for heavier locomotives and higher speed has increased the problem associated with the design and maintenance of railway tracks. The maximum permissible speeds have been determined by experience rather than by calculation and depend on the weight and type of the rolling stock in relation to the various parts of the track structure comprising the rails, sleepers, ballast and roadbed. In early years 50 to 60 miles per hour was the maximum speed of passenger trains on the best lines. Today 70 to 75 miles per hour is the rule although 80 to 90 miles per hour is allowed on several lines whilst on a few spectacular runs speeds exceeding 100 miles per hour are attained mostly by light railcars such as the famous Flying Hamburger and Michelines.

VERY heavy passenger locomotives are run at these great speeds and to withstand the loads imposed and ensure safe and comfortable travel a strong track and high standard of maintenance are necessary. The maximum axle load affords an idea of the loads imposed by the locomotives. In the case of passenger locomotives, this has been progressively increased to about 23½ tons. This is the heaviest axle load in Victoria, and is the heaviest in use anywhere outside America where it runs up to 33 tons.

Heavier and longer rails of improved quality are being used in the tracks, but the tendency towards increasing the number of the sleepers rather than the weight of rail is becoming more

generally constructed as developmental railways with narrow banks and cuttings, and laid with 23-foot length rails, weighing 60 or 66 lb. per yard, on sleepers spaced 3 feet centres and ballasted with gravel.

These lines are being strengthened in the manner described. The weight of rails has risen progressively to 92 lb. on main country lines and to 110 lb. on suburban lines, whilst the rail length has increased to 45 feet, and since the introduction of welded joints to 225 feet. The spacing of the sleepers has been reduced to 2 feet 2 inches. Broken stone ballast, to a minimum depth of 10 inches under the sleepers, is being provided and the roadbed widened.

Most of the main lines were not built for high speed running. With the introduction of maximum speeds up to 60 and 70 miles per hour, however, a study was made of the speed restrictions at curves and over points and crossings which cause loss of time between terminals and limit the advantages of more powerful locomotives.

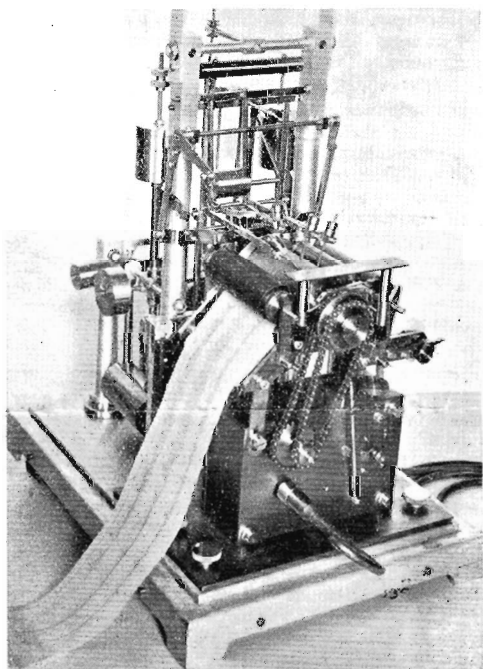
60 Miles Per Hour

For many years, the speed over points and crossings was restricted to 40 miles per hour. By the use of heavier rails, improvements in design and close attention to maintenance, it has been possible to progressively raise this speed to 60 miles per hour with safety.

The increase in speed at curves and over points and crossings has been an important factor in shortening the train running schedules. On the North-Eastern line, the curves are flat and excepting at a few special junctions, the speed is nowhere restricted to less than 60 miles per hour, the maximum being 70 miles per hour.

Many instruments have been designed for testing the riding qualities of vehicles and detecting irregularities in the level and alignment of the rails. A small portable type known as the Hallade track recorder is in use in Victoria. It consists of sets of pendulums by means of which the rolling, lurching, and bouncing of any vehicle are recorded on a chart on which are marked the speed, mileage, location of curves, etc. The exact locations at which the track needs attention by the section gangs or where engineering improvements are required, are faithfully shown.

The instrument has proved of the utmost value not only in preparing and maintaining the tracks for higher speeds, but in fixing the maximum permissible speeds for passenger, mixed and goods trains over different types of track, having due regard to safety and comfort.



The Hallade Track Recorder

marked. Stronger ballast in greater quantity is being provided, the foundation of the track is being improved and drained, whilst the tracks and curves are being re-aligned. In some instances, the number of men working on the track has been increased to ensure that irregularities in the level and alignment of the rails are kept within safe and comfortable limits.

In Victoria, many of the main lines over which high speed trains are now run were ori-

—SHORT STORY

A Birthday Lesson

KEN was twelve. Now I suppose that almost anyone can be twelve, and indeed nearly everyone has been twelve. Nevertheless, it was the first time that it had ever happened to Ken, and he was very excited about it.

It had better be quite clear from the start that this little boy of twelve was not a prince or the long lost son of a millionaire or anything like that—he was just a plain little boy who went to school and who did some things he shouldn't and most things that he should. His father had a car and his mother looked after the home and he had a sister older and a brother younger than himself. So there you are. What happened to him is just the sort of thing that might happen to anyone, even though they might never have another twelfth birthday.

One thing that Ken had that only his brother and sister shared with him, and that was an uncle—not an ordinary common-or-garden sort of uncle, but a very special uncle. Uncle Ben Richards lived in America, and birthdays and Christmas in Ken's house were always very exciting because Uncle Ben sent them all something from America. This time, though, he was actually coming to see them, and he was due to arrive in Melbourne on the great day—the day of the birthday party.

The day was not very nice at first—rather dull and a little cold, but that didn't seem to matter somehow. Ken and mother went into the city in the morning, for some clothes had to be bought and Ken was not to be trusted at home alone with all the house carefully cleaned and prepared for the party. So they spent the morning busily shopping, and then, both a little tired and pleased to be on their way home again, they came down to Flinders Street to get the train.

Mother and boy sat down on the platform to wait for the train, when suddenly, mother remembered a paper that she had promised to buy for Ken's father.

"Ken," she said, "Run down to the book-stall down there, and buy Daddy a copy of the *Age*. Here is the money."

Ken worked off his excitement by tearing down the platform at a great rate, and duly bought the paper. Coming back again, he was well set to break an under 16 record for 100 yards. The only thing that he forgot was that he was not on a running track. He was half way down the platform when he knocked into the man who was standing near the edge and sent him tumbling on to the rails.

Fortunately, there was not a train coming, and a porter and one or two people who were standing by, helped him back to the platform. He was a big man, well dressed, and not exactly young, and when he spoke there was something funny about his accent. He did not seem to be hurt, although he limped painfully when he tried to walk. He was assisted from the platform to the porter's office, and there his ankle was examined.

But what of Ken? Well, Ken had done something that was not very nice. The whole thing was so sudden that no one had taken any

particular notice of the little boy who had done all the damage, and as Ken's mother was on the other side and further down, she did not see any of it. So when her small son came back looking a little ruffled and a little guilty, she made no remark, except that he had been quick, whereat Ken looked even more guilty. For the plain fact of the matter was that Ken had run away from the accident without waiting to see how the man he had knocked over had got on.

* * * *

BY the time the afternoon had come, Ken was excited to fever-pitch. Uncle Ben was due to arrive at any moment, and there was a continuous stream of guests arriving at his party with a whole lot of presents. He did not bother about any of the games which were started, but hung about the hall waiting for the most important arrival.

It was not until quite late that a taxi drew up outside their front door, and a man got out leaning heavily on a stick, and carrying a large parcel. Bursting over, Ken, who had seen the car pull up, ran to tell his mother. Out came mother, and by the time that the new arrival had got to the front door she was there to welcome him. Ken, who suddenly felt shy for some reason he could not place, kept out of the road for a moment. Mother and Uncle kissed each other, and then fell to enquiring about each other's health. It seemed that Uncle had had an accident, and that his ankle was hurt. He told mother all about it, and there was a great conference. Then Ken came out.

"This is Ken," said mother. "Ken, do you remember your Uncle Ben?" There was something about the man that Ken seemed to remember, but he was not sure, so he said he didn't. Then mother told him that Uncle Ben had had an accident, and was going to lie down until tea time.

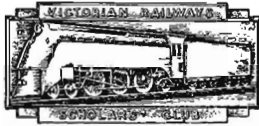
Tea came and was disposed of, as only fifteen hungry boys can dispose of it. Then Uncle Ben sent Ken up to his room to collect the parcel. Ken was up and down stairs in a twinkling, and gave his Uncle the parcel.

"Now," said the Uncle from America, "I want you all to pay particular attention to what I have to say." He opened the box, and there was a model railway—complete with stations, rails, signals, and—and—an electrically operated train. He set the rails together, put the station in place, and set the trains on the wheels.

"Unfortunately," he went on, "This model railway, which is my present for Ken, has had an accident. It seems that one of the passengers was standing on the platform when a little boy came running down and knocked the passenger down on to the rails. The passenger was seriously hurt, and so I am afraid that the railway will have to stop operating for a week." And he put the train, with all its rails and signals on the wireless.

"There," he said, "It will remain until the end of the week, for we cannot have little boys running up and down platforms and knocking people down."

Then Ken remembered. It was his uncle whom he had knocked off the platform.

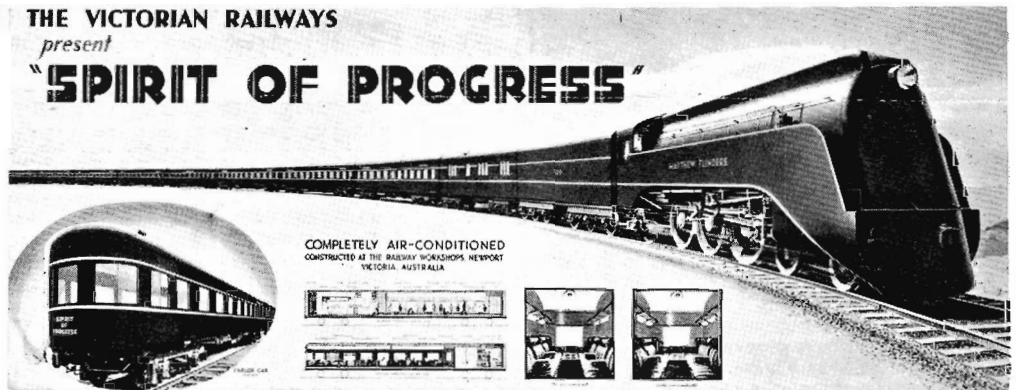


SCHOLARS' CLUB BULLETIN

November, 1937.

No. 4

Look For This Poster On Your Station !



IT is with pride and pleasure that the Victorian Railways give readers of the Scholars' Bulletin an advance description of the "Spirit of Progress," the most modern train in the Southern Hemisphere. In future issues we hope to have more to say about the technical details of the train. For the present, we are concerned mainly with the point of view of the passenger. The first things that will impress everyone are the smooth lines, speedy appearance, and striking color of the train. It has been painted royal blue with two gold bands running throughout the whole length.

Carriages, tender and locomotive are all of uniform height and width. Nothing has been permitted to protrude, even the windows being flush with the exterior, giving a perfect streamline effect. When we are once aboard the train, we find colour and taste, comfort and efficiency. The timbers used in the panelling are exclusively Australian, and carefully chosen.

Flowery walnut is used in the end smoking compartments, jarrah in the next smoking compartment, royal walnut in the first-class ladies' compartments, silver silkwood in the second-class ladies' compartments, and ribbon walnut in the other compartments. The upholstery is of chrome leather, red in the first-class smoking compartments, grey in the first-class ladies', and blue in the other first-class compartments. In the second-class cars the colour is maroon in the smoking compartments, grey in the ladies' compartments, and green in the others.

Months of experiment were spent in designing the seats, which are the last word in comfort. One new feature is the disappearing arm rest, which can be folded back at will. The padded seats and backs are carefully sprung. The carriages themselves have been constructed to reduce noise to a minimum.

The windows, hermetically sealed for the purpose of air-conditioning, consist of double panes of unshatterable glass, and give the widest

possible view of the passing landscape. The lighting scheme is an outstanding feature. A lamp giving a soft diffused radiance is set in a frosted globe in the ceiling of each compartment. Also each passenger in the sitting carriages is provided with a reading lamp so placed that the light does not interfere with the comfort of other passengers.

There are eight compartments in each sitting carriage—one ladies', five non-smoking and two smoking. Each compartment in the first-class carriages seats six passengers (three on each side) and each second class compartment seats eight. The saloon in the dining car is panelled in satin-finished Queensland brown beech, which matches the rich old-gold Axminster carpet. An attractive ceiling, with carriage-length indirect lighting and brown beech chairs, upholstered in pastel green, make this saloon as beautiful as it is comfortable.

The walls, roof and floor have also been effectively insulated against noise and heat. The floor comprises first, a covering of rubber lino, then a layer of sponge rubber; underneath that is wood fibre board, then a thick layer of cork over Keystone Cor-ten steel plates. Beneath all this is a layer of hair felt over a sheet of aluminium. The walls and roof also have been insulated against heat and noise. The train is completely air-conditioned guaranteeing regulated temperature, in summer or in winter—with freedom from smuts, flies, dust or draughts.

"Save To Travel"—The Latest Way

SPECIAL STAMPS ON SALE

THE Australian Steamship Companies, Airways Companies, Victorian and Commonwealth Railways and Pioneer Tourist Bureau are co-operating in a scheme to assist people to save for travel, whether by rail, road, sea or air.

"Save to Travel" stamps are now on sale at railway stations, post offices, shipping, road services and airway offices, and at the Victorian Government Tourist Bureau and Branches at the Spencer Street and Flinders Street railway stations.



As you buy the stamps, you stick them on the cards which are available for the purpose, and when you have sufficient saved up, you can exchange them for tickets to wherever you wish to go by rail, road, sea or air. If you haven't saved up the full amount, then the stamps will be accepted in part payment. The minimum fare is 10/- . The stamps are available for either 1/- or 5/- .

As the Christmas holidays are less than eight weeks away, start buying "Save to Travel" stamps now. For convenience obtain them from your nearest railway station.

RAILWAYS ARE ON THE AIR

FOR some time now, the Victorian Railways have sponsored over the Metropolitan commercial stations a series of features that are instructive, informative and entertaining. Here is the complete list of Railways features :

- 3AW—Every Tuesday, Wednesday and Thursday, at 8.0 p.m.—"This Happened in Australia," an historical interlude. Every Monday, Wednesday and Friday at 5.0 p.m., in Chatterbox Corner, "A Peep Behind the Railway Scene."
- 3DB-3LK—Every Tuesday and Thursday, at 7.15 p.m.—"Do you know?—Musically :"—a musical presentation.
- 3KZ—Every Monday and Wednesday at 9.30 p.m.—"Famous Journeys."
- 3UZ—Mondays to Fridays at 8.15 a.m.—Railway Information. Mondays to Fridays at 9.45 a.m.—Railway Information.
- 3XY—Every night (Sunday excepted) at 7 p.m.—"The Radio Newsreel," an instructive and entertaining commentary in drama form. Railway information every day (except Sunday) at 8.45 a.m. and 3.15 p.m.

ATTENTION—PLEASE!

If any of the members move to a new address, they should inform Bill Smith, c/o Betterment and Publicity Board, Railways Administrative Offices, Spencer Street, Melbourne, CI, otherwise their copy of the Bulletin will be returned to us unclaimed.

Remember, let Bill Smith know if you change your address!

* * *

R. Cook, 24 Iffla Street, South Melbourne, SC5, desires to correspond with another boy about 10 years of age.

John Mitchell, 66 Walker Street, Dandenong, wishes to correspond with boys interested in stamp collecting.

Ralph Doherty, 2 Regent Street, Oakleigh, SE12, wishes to correspond with members interested in engineering.

BILL SMITH'S LETTER

DEAR MEMBERS :

WELL, the month goes round quickly, doesn't it? It seems only a few days ago that I wrote you the last letter, and now we are into November. I want to thank the many members who have written to me. I have had an enormous number of letters, and they have all been very interesting. I am always pleased to hear from members and learn of their hobbies, etc.

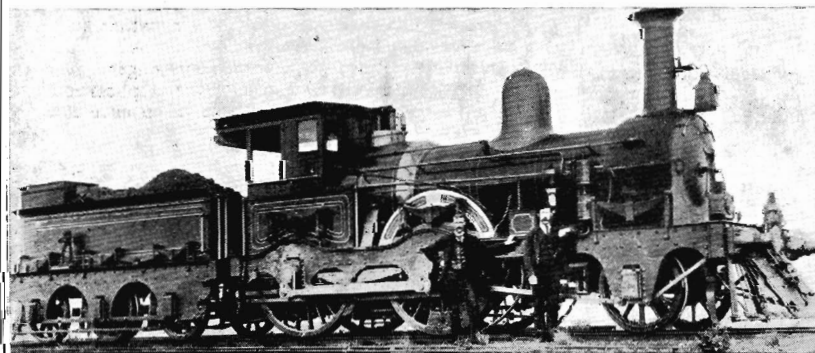
There is a lot of news in the Bulletin this month. The boys in the locomotive depot are all very proud of the train you can see on the front page. It won't be long now before you will be able to see it running. We have a story about special stamps by which you can "Save to Travel."

Judging from the letters I have received, there seems to be a great deal of interest in the first railways. This month we have an article on the earliest days of organised railways, in place of the usual story. I will be pleased if members would write and let me know what they think of it.

The letters I have received also tell me that Chatterbox Corner from 3AW is very popular. The Victorian Railways are "on the air" from other stations also. You will find details of the Railway broadcasting programme on this page.

So long till December

BILL SMITH,
The Engine Driver



This type of locomotive — "B" class — hauled the first Sydney Express from Melbourne on August 20, 1883.

Newport "A" Power House is Important Feature of Suburban Train Services

ONE of the most interesting and most important railway activities is the Newport "A" Power House. It is the basis of the suburban electric railway system, and a brief survey of the operating methods at the Power House will prove of great interest to members of the Victorian Railways Scholars' Club. The Newport "A" Power House, which is situated near the mouth of the River Yarra, covers an area of 30 acres. Besides generating all the power used by the electric passenger and goods trains, this Power House supplies the electrical energy for the electric trams which run between St. Kilda and Brighton Beach and between Sandringham and Black Rock. It even supplies power for the operation of the automatic signalling system on suburban lines and the Melbourne to North Geelong line.

Electricity produced at Newport Power House drives the machinery at railway workshops, depots, etc., and provides the lighting for many railway stations, goods yards and private factories. Thus, the Power House is the scene of great activity.

Near Newport "A" is the Newport "B" Power House which, although operated by the Victorian Railways Department, is owned by the State Electricity Commission. Here is generated electricity for household purposes, electric lights, irons, stoves, bath-heaters and vacuum cleaners in the suburbs of Melbourne.

Many people have been intrigued by the fact that the Newport "A" Power House was built near the mouth of the River Yarra. The reason is that a large volume of water is needed to condense, or change into water, the steam that is raised in order to produce electricity. And salt water being most plentiful, the Power House was built near the sea.

Every day, 55,000,000 gallons of salt water pass through the condensers at the Newport "A" Power House in converting the steam from the turbines into water for use in the boilers again. Owing to the corrosive action of salt water, only fresh water is used in the boilers.

Lots of Coal and Water

The warm circulating water from the condensers is discharged into Hobson's Bay where a retaining wall ensures that the incoming cold and outgoing warm waters do not mix. Needless to say, the portion of the Bay where this water is discharged is popular with swimmers living in the vicinity of Newport Power House. There are 24 boilers at the Newport "A" Power House, under which 460 tons of coal are burned every day, to turn 650,000 gallons of fresh water into steam.

Many of you may not know what energy or power is? Coal represents what is called fuel energy. When burned under boilers containing water, this energy is given to the steam, and is then named heat energy. The heat energy or steam thus generated then passes through pipes to the turbines, where it drives the blades of the turbines around at a speed of 350 miles an hour to make mechanical energy. Connected to the turbines are alternators, which change this mechanical energy into electrical energy, or electricity, as you know it, at 3,300 volts alternating current.

After turning the turbine blades, the steam passes into condensers, which are cooled by salt water from Hobson's Bay. Entering the cold condensers, the steam is changed back into water, which flows into the boilers to be evaporated into steam once more.

Screens have to be used to ensure that the

pumps, which draw the 55,000,000 gallons of salt water from the Bay each day, and the small tubes in the condensers, do not become blocked by shellfish and other marine life. Mussels thrive in the intake channels at Newport "A" Power House and as much as 190 tons of these shellfish have been removed from the screens at the Power House in a period of 12 months.

The two boiler houses in the Newport "A" Power House cover an area of 27,000 square feet, while the overhead coal bunkers inside the boiler houses have a capacity of 3,600 tons of coal. The turbine room measures 260 feet long, 78 feet wide and 68 feet high. An alternator weighs 68 tons, and its moving part revolves at the rate of 1,500 times a minute. The whole Power House machinery represents electrical energy of 78,000 kilowatts, which are equal to 104,500 horse power.

20,000 Volts !

* After the electrical energy at 3,300 volts has been generated, it goes through one more process before being sent, or transmitted from the Newport "A" Power House. It is fed to transformers, which increase its power to 20,000 volts for transmission through 141 miles of underground steel cables and 152 miles of overhead lines to the 23 electrical substations around Melbourne.

At these substations, the voltage of the alternating current is reduced to 1,100 volts, after which it goes through a rotary converter which changes it into direct current at 1,500 volts. This direct current is then fed through cables to the overhead wires along the 440 miles of electric railway track in and around Melbourne.

Just as we saw that mechanical energy is changed into electrical energy at the Newport "A" Power House, so this electrical energy, after being transmitted through the overhead wires to the motors of electric trains, is changed back into mechanical energy which drives the wheels of the trains.

Heavy "Peak" Traffic

On any week day, 105 electric trains are in running during each of the morning and evening "peak" periods, when people are going to business and returning home. At these times, the "load" at the Newport "A" Power House rises to 65,000 kilowatts. These are particularly anxious times for the Control Engineer, in whose room at the Newport "A" Power House any fault in the system is instantly shown by means of electric indicators. Faults are few and quickly mended. Melbourne's big electric railway system works smoothly all the year round, giving fast transport to 135 million passengers.

...The Beginning of Railways...

IT was in the first years of the seventeenth century that railways first made their appearance. Railways as they were then, were rather primitive. They used wooden rails, and the trucks were drawn by horses. The only reason why they were any use at all was that the roads of the period were simply cart tracks.

Experiments had been made in "steam carriages" ever since a Frenchman built a curious model in 1763, but these carriages were not adapted for rails. Trevithick had the idea of combining the two. In 1804, he built an engine to run on iron rails, which drew a load of ten tons at the rate of five miles an hour, but unfortunately it smashed up the rails, and Trevithick lost heart. All the same, this engine contained most of the important features later used by Stephenson.

Experiments went on, and soon a railway was working at Wylam, running past the cottage where Stephenson was born. It was built to the order of a colliery-owner named Blakett, who, after many failures, succeeded in getting an engine to draw his coal from the pit-head to the barges on the Tyne River, four miles away. In doing this, he exploded the theory, held by most engineers at the time, that a smooth wheel would not grip a smooth rail, and that the engine must therefore have a cogged wheel working on a rack-rail beside the track.

Stephenson Starts

But all the same, these engines were clumsy, lumbering, unreliable things, with a maximum speed of three or four miles an hour, and they hardly repaid the cost of construction and running expenses.

This was the position when George Stephenson started experimenting in steam traction. George Stephenson was born at Wylam, near Newcastle, in 1781. George grew up from childhood among steam engines. At the age of fourteen he became, to his great delight, assistant fireman to his father, helping him tend the engine that pumped the water from the coal mine where he worked. Without any education (he could not even read) and without any influence, he soon won, by sheer ability and perseverance, the reputation of being the cleverest mechanic in the district. He first became famous as an "Engine-doctor"—one who could always repair a damaged machine—but he was far too enterprising and ingenious to stop there.

Main Problems

It was impossible for him to mend or overhaul a defective machine without thinking up some way to make it more efficient. The invention of any machine is generally a long and complicated process. Several people discover and invent different movements and processes, and it remains for one man to put all of them together. It was George Stephenson who put the steam locomotive together.

There were two main problems that had to be overcome. One was how to keep up the pressure of the steam, and the other was to devise some method of transmitting the movement of the piston to the wheels without jolting the whole machine to pieces in the process.

The first engine that Stephenson built was little better than those that had gone before. The steam from the cylinders was discharged

into the open air with such a noise that the cattle in the fields were terrified.

In his second engine, Stephenson made an important change. The waste steam issued from the chimney of the locomotive, and the result was a much better draught for the furnace. Hence much more steam was generated. The inventor then turned his attention to the other weak spots in the designs, and he soon designed the direct acting connecting rods, with ball and socket joints, which did away with a lot of cumbersome gears.

Many more improvements were made, both by George Stephenson and his son Robert, but the engine which he built in 1815 definitely is the father of all modern locomotives.

Much credit must be given, not only to the men who made the first locomotives, but also to the men who used them. In spite of the laughs and jeers of their neighbours, they persisted with the new form of transport, until they in turn had the laugh on their neighbours.

Historic Event

THE first public line to be built in England, was the Stockton and Darlington Railway, which was originally intended for the transport of coal. The man who thought of this line was Edward Pease, "a man who could see a hundred years ahead," but had planned it for horse traffic only. It was George Stephenson who went out of his way to implore him to use locomotive traction, and have rails of iron instead of wood.

It remained doubtful up to the last moment whether the company would take his advice. When the railway was opened in 1825, however, it was a locomotive driven by Stephenson himself that made the first journey, "and such was its velocity, that in some points the speed was frequently 12 miles an hour!"

The railway was an unqualified success as a coal carrier, and it also began to carry passengers, although this had not been part of the original intention. The passenger coaches were all drawn by horses and were run by private companies. It was a single line, with four sidings to the mile; there was no time-table, and no rule of the road. In the early days, it was quite a common sight to see two drivers holding a lengthy argument as to which train should give way to the other. Before very long proper passenger trains were being run, and the company had taken over the regulation of all traffic on the lines.

"The Rocket" Wins

The success of this railway was followed by the building of a line from Liverpool to Manchester, after the necessary permission had been obtained from Parliament. The company was anxious to get the best possible locomotives to draw their trains, and so they organised a competition, with a prize for the best loco. in a trial on the tracks. The trial was a curious affair, as nearly all of the entrants failed to start or broke down soon after, but the result was beyond doubt. Robert Stephenson's locomotive, "The Rocket," attained a speed of 29 miles an hour, and demonstrated that it was easy to handle even at that speed.

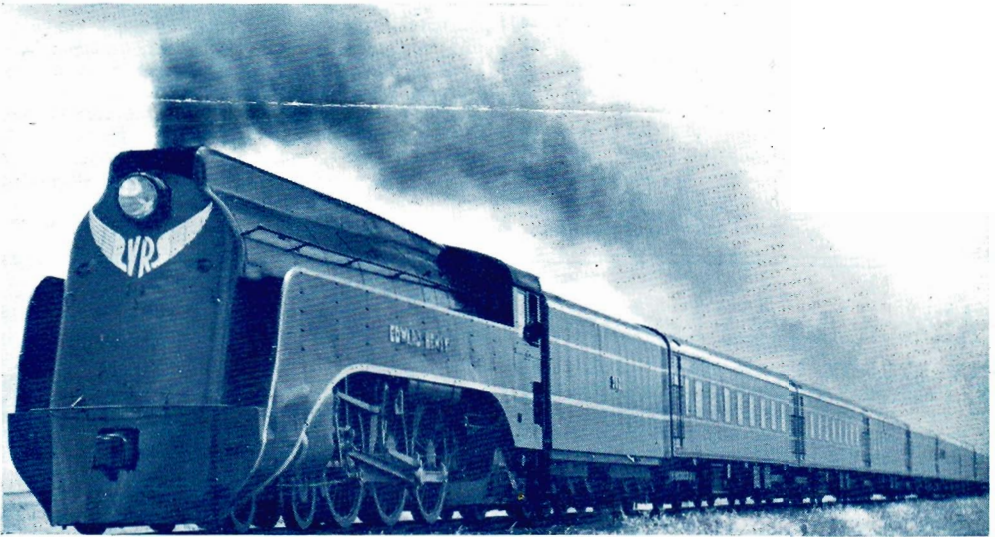


SCHOLARS' CLUB BULLETIN

December, 1937.

No. 5

“Spirit of Progress” at 70 M.P.H.!



IF you are ever lucky enough to travel on “Spirit of Progress,” you will discover that it is really a house on wheels. There is a wonderful lounge, a big dining-room and a spotless, gleaming kitchen on board. Let us pay an imaginary visit to the parlor car first.

IT is a long room, which is round at one end. The walls are lined with beautiful polished woods—satin-finish blackwood in the non-smoking saloon and cedar in the smoking section. There is a soft carpet on the floor, and big comfortable chairs and lounges. Arranged around the observation end of the car are tables of polished wood bearing bowls of colourful flowers.

Telephone on Train

And on one of the tables there is a telephone. Yes, a real telephone. When “Spirit of Progress” is standing at Spencer Street station, this telephone is connected to the Central Exchange, so that passengers may ring up their friends, if they wish to do so.

Now, come along to the dining car. Here the walls are lined with Queensland brown beech—a beautiful wood—and all the chairs are made of the same material and are upholstered in green. There is a long line of tables down each side of the car, and the tables are covered with snowy white cloths and gleaming glass and silverware.

Here you can sit and eat your dinner in comfort, while “Spirit of Progress” rushes swiftly along. So steady is the train, that although it may

be travelling at 70 miles an hour the water in the jugs on the dining car tables hardly even ripples.

Even more wonderful is the kitchen, which is all silver metal. There is a great big kitchen range along one wall and a long metal bench along the other. Two big metal wall cupboards, with shining sliding doors, are over the range. The floor is made of some red material which has been specially treated so that the cooks will not slip on it.

Features of Kitchen

On the wall at one end of the kitchen are two big racks, which are filled with cups . . . all sorts of cups . . . each one being held in place by two metal clips.

The smell of cooking is greatly minimised. The reason for this is that in the kitchen on “Spirit of Progress” there is a special air-circulating system. The old, stale air is removed and a fresh supply of cool, dust-free air is constantly coming into the kitchen through special ventilators.

So that even the cooks, who usually have a hot tiring job, work and travel in comfort on “Spirit of Progress.”

Making "Spirit of Progress" Perfect

WE should all be proud of the new streamlined train, "Spirit of Progress," because there is no train in Australia that is more comfortable, faster, or safer.

Many months of work have gone into the making of the wonderful train, which is pictured on the front page of this issue.

Perhaps you will get some idea of the trouble, which has been taken to make it perfect. Let us tell you about some of the tests which were made by the engineers who built it. Here are just a few of them:

In order to make certain that the armchair seats in all the carriages would be the most comfortable in the world, a number of chairs of different kinds were built. Then the engineers invited a big man, a small man, a tall man, and a short man to try them all.

The type of chair, which they all said they liked was chosen for "Spirit of Progress," because it was the kind that everybody would be comfortable in.

The engineers wanted "Spirit of Progress" to be noiseless, too. So they collected all sorts of materials,

which were supposed to deaden sound. Then they tested them by ringing bells and tooting motor horns, covered with the particular material which they wanted to test.

And they kept on testing until they found the material that gave them the best results and they chose it.

They decided also that, in addition to being fast and noiseless, "Spirit of Progress" should run more smoothly than any other train in the world.

These tests show the great care the Victorian Railways took to make the train ride perfectly comfortable. Because they were made, passengers on "Spirit of Progress," make the long non-stop run of 190½ miles, between Melbourne and Albury as comfortably as if they were sitting in their favourite armchair at home. Yet they will be travelling on the fastest train in the Southern Hemisphere, frequently at 70 miles an hour.

Not only engineers, but lighting experts, artists and architects have all helped to make "Spirit of Progress" the finest train in the world.

Air-conditioning Explained

EVERYBODY knows that "Spirit of Progress" is air-conditioned, but not many people know what air conditioning really is. When we say that "Spirit of Progress" is air-conditioned, we mean that the air inside the carriages has been specially treated so that the passengers may travel in comfort.

We can explain this better, if we pretend that we are seated in one of the carriages of "Spirit of Progress." Outside the train it is very hot and dusty. The sun is shining strongly and a nasty north wind is blowing up the dust in huge clouds. Yet, inside the train the air is cool and fresh and there is not the slightest sign of dust or grit anywhere on the upholstery of the armchair seats.

The reason for this is that the air, which is flowing through the carriage, has been conditioned. Up above the ceiling of the car at one end, there are two powerful electric fans, a special cooling machine and two special filters.

Fresh air is drawn in from outside the carriage by one of the fans and is passed through one of the filters, which removes every speck of dust from it. Then it goes through the cooling machine, which makes it pleasantly cool. After that the other fan blows it through the ventilators into the carriage.

After the air has flowed through the carriage, it passes through a ventilator into the second filter, which removes any dust or dirt it may have picked up in its journey through the carriage. The air is then blown into the carriage again. In this way the passengers in the carriage are sure of a supply of fresh, cool, clean air, no matter how hot or dusty it may be outside.

The air-conditioning system is worked from a special switchboard at the end of the carriage, and the electricity providing the power for the service is made by an axle-driven generator beneath each air-conditioned carriage. The carriage is in charge of the car attendant, who can make the air supply cooler, or warmer as required.

Attached to the air-conditioning system is a wonderful machine that controls the cooler automatically. This means that the supply of cool air is always at the same temperature.

In the winter, when it is cold and wet outside, the air in the carriages is heated instead of cooled. This is done by a special heating machine, which is used instead of the cooling machine.

DEAR MEMBERS—

AS you can see, we have made this issue of the Bulletin a special "Spirit of Progress" number. But even so, we have not had enough room to tell you about all the interesting things on this marvellous train. I was lucky enough to be able to walk right through "Spirit of Progress" when it was on show at the Spencer Street station, and I wish I could have had all of you with me.

There were dozens and dozens of things I could have shown you, which we haven't room to describe in the Bulletin. For instance, there was a special new periscope arrangement in the guard's van, which enables the guard to see from one end of the train to the other along the tops of the carriages without leaving his seat on the floor of the van.

Of course, being a driver, I was most interested in the locomotive.

I hope that some of you, at least, managed to go along to Spencer Street while "Spirit of Progress" was on show there, because we railwaymen are very proud of our new train and want you to be proud of it, too.

If you DID see "Spirit of Progress," I should be very pleased if you would write to me and tell me what you thought of it. Will you do that?

Next month I hope to have a lot of new features for you, which I am sure you will enjoy.

But in the meantime, I've got to attend to my job. So until next month, I'll say goodbye—and hope that you all have a really Merry Christmas.

BILL SMITH,
The Engine Driver.

Romance of the Locomotive

WHEN 3 MILES PER HOUR WAS DANGEROUS!

WHEN we look at pictures of "Spirit of Progress," it is hard to believe that the world's first passenger train made its first run only 112 years ago—on September 27, 1825, to be exact. The carriages had no springs or roofs, and looked rather like soap-boxes on wheels. Before that time, they were very often pulled along by a horse instead of by a steam engine. All lines were single tracks, with loops here and there for trains to pass.

UNFORTUNATELY, there were no set time-tables. So two horse-drawn carriages would often meet mid-way between loops on the single track. At such times there would be a fierce argument between the two drivers, as to which coach should back to the nearest loop. The question would generally be settled by a free fight, in which the passengers of the two coaches would take sides and urge their particular driver on to victory.

This went on until one day a driver solved the problem by getting his passengers to lift one of the coaches off the line and put it back again after the other coach had gone by!

Although the first actual passenger train was put into use in 1825, the first locomotive was made many years before that. It was made by a very clever Frenchman, who built it about seven years before Captain Cook reached Australia in his ship *Endeavour*.

Unfortunately for the Frenchman, whose name was Cugnot, nobody had thought of rails at that time. So he had to drive his locomotive along the road. But the roads in those days were very rough, and one day when the locomotive was travelling at its top speed, which was only three miles per hour, it capsized. After that the Government would not permit it to be driven any more. They said that the speed was dangerous!

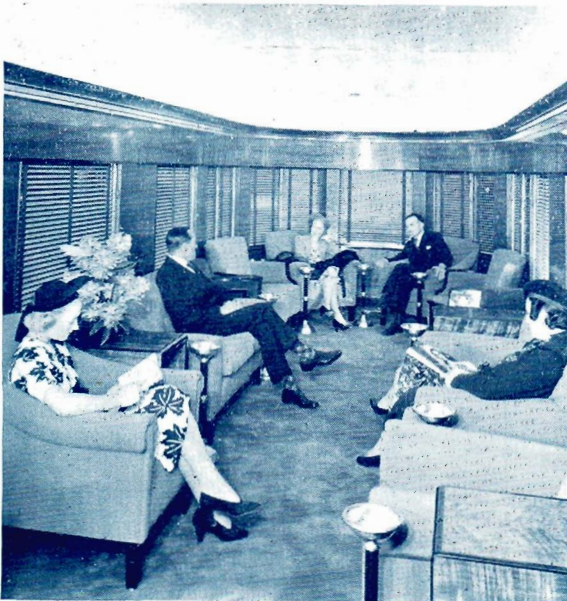
Nothing more was done about it for many years. Then, after many experiments, a Cornishman named Richard Trevithick, built an engine, which ran on rails. It was the first useful steam locomotive. It pulled several waggons and 10 tons of iron. That was in 1802.

After that several other people built steam locomotives and used them for hauling coal or iron. No attempt was made to start a passenger service until 1825, however, when a special train carried 553 people and hauled several waggons filled with flour and coal for 27 miles. At one stretch the train reached its highest speed of fifteen miles an hour.

But even though this proved that steam locomotives could be used for hauling passenger trains, people continued to use horse-drawn coaches, like the ones described above.

Inventors continued to experiment with steam locomotives, and in 1829 it was proposed to build a railway line between Manchester and Liverpool. A prize of £500 was offered for the most effective steam locomotive. The conditions were that the locomotive was to haul a load equal to 3 times its own weight at an average speed of 10 miles an hour.

This competition was won by the famous "Rocket" which was designed by George Stephenson. "The Rocket" won easily. Its speed was 29 miles an hour. This trial convinced people that the steam locomotive really was of practical use. From that moment railways came into existence and began to improve rapidly.



HERE you see a section of the observation saloon of the parlor-observation car on "Spirit of Progress." How do you like it? This saloon has accommodation for 18 passengers in four large and four smaller armchairs and five two-passenger settees. The armchairs and settees are upholstered in fawn, blue and pastel green pin weave tapestry. The paneling is of Australian blackwood, and the wide, double-pane windows are all fitted with Venetian blinds.

A Little Boy has a Wonderful Ride

DENIS Bradley was very excited, and with a good reason, too. It is not very often that a boy of ten makes a journey of 190 miles alone. Yet, that was just what Denis was going to do. He was going to stay with his aunt and uncle in Albury, and he was to travel on "Spirit of Progress"! Denis had seen many pictures of "Spirit of Progress" in the newspapers, and he had often wondered what it must be like to ride in such a wonderful train. And now he was going to do it.

THE thought of it had made Denis so excited that he had been unable to go to sleep. He had lain awake for ever so long thinking about it the night before, and even now he wasn't altogether sure that it wasn't a dream.

He had been awake almost at sunrise and had had hardly any breakfast. He was so excited.

All the way to the station he had been in a fever for fear that the train might have gone . . . or that the car might break down . . . or that they might go to the wrong platform . . . or a hundred and one other things . . . until his mother had to threaten to keep him at home, if he did not behave. That quietened him, as you may be sure. He sat as still as a mouse for the rest of the trip.

And now, with a reserved seat in the corner of a first class carriage, Denis was ready for a stroll along the platform with his mother. Naturally, they headed towards the great blue engine. Denis was thrilled, when they were finally standing beside it and gazing at it towering high above their heads.

It looked so big and powerful, that Denis wondered how two men could drive it. It looked as though it should have carried a crew as large as the crew of a great ship.

The shining piston rods . . . the huge driving wheels . . . everything about it fascinated him. His eyes grew as large as saucers and danced with delight.

Standing on tip-toe he was trying to peer into the driving cabin, when a deep voice behind him said, "Like to come up?" Denis gave a little jump of surprise. Turning around he saw that it was the driver . . . at least he LOOKED like the driver should look, so Denis thought he must be. "Can I?" he said.

"Well," said the driver, for, of course, it was he, "We don't usually do it. But YOU look the proper sort of boy. So, that makes it all right!" Denis's eyes opened very wide at that, and he looked beseechingly at his mother.

His mother was the proper sort of mother; so, of course, she said that he could. The driver helped him up on to the foot-plate. Denis drew a deep breath. In front of him was a mass of levers, dials and gauges. Needles, that quivered and flickered somewhat . . . and there were mysterious hissings and puffings everywhere.

"Just a minute," said his friend the driver, "We've got to keep the kettle boiling or we shan't have any steam to pull you people along with. Would you like to see the fire?"

Would he? Denis's glowing eyes said that it was silly to ask such a question. The driver threw open a door and there right in front of Denis was the furnace. The fire was a radiant blaze of red, yellow and orange.

"You'd be surprised," the driver said, "at the amount of coal it takes to keep the steam in the boiler at a pressure of 200 pounds to the square inch."

"Do you have to carry very much?" asked Denis.

"There's eight and a half tons of it behind you," said the driver, "and 13,000 gallons of water waiting to be turned into steam. There's a great number of things about the engine, which would surprise you, but there isn't time to explain them. I think you had better be getting along to your carriage. We're leaving in a few minutes now."

So Denis climbed down again, after saying goodbye to his new friend, the driver, and he and his mother went along to the carriage. They just got there in time, for as Denis slipped into his seat, the guard blew his whistle. Instantly the great blue engine shrilled a deep warning and a huge puff of steam shot into the air from the hidden funnel. Denis didn't know he was moving until he saw the platform sliding away carrying his mother with it.

The "Spirit of Progress" had commenced its 190 mile non-stop run to Albury. . .

Big New Train is Spring-cleaned Daily

HOW would you like to spring-clean "Spirit of Progress"? This job is done every day. Immediately the journey is over the carriages are taken away to the sheds at West Melbourne and given a thorough spring-cleaning.

Dusty carpets are rolled up, carried away and cleaned. The floors are washed. All the fittings are dusted, and fresh glasses, towels and soap are installed throughout the train.

The tanks under each carriage, where the water for drinking and washing is kept, are refilled. And the windows are cleaned. This is done by four men who all work at once. Two do the outside of the windows, while two others keep pace with them on the inside.

Next, a car builder and an upholsterer go through the cars to see that none of the wood-work or chair covering has been damaged while undergear men inspect the wheels and axles.

In the parlor-observation car at the rear of the train a man and boy re-arrange the arm-chairs and tidy up generally. They run vacuum cleaners over the carpet, refill the racks that contain the special headed notepaper and envelopes, adjust the telephone, and replace the soiled blotting paper with fresh.

All this work is done so quickly and well, that in next to no time "Spirit of Progress," spotless and gleaming, is ready to make her non-stop run back to Albury the same day. This spring cleaning is done, not once a month, or once a week, but every day!