

CAMBRIAN RAILWAYS.

Ministry of Transport,
Public Safety and General Purposes Department,
7, Whitehall Gardens, S.W.1.

8th April, 1921.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order of the 27th January, the result of my Inquiry into the causes of the collision between two passenger trains, which took place on the 26th January, about 12.6 p.m., between Abermule and Newtown Stations, on the Cambrian Railways.

The trains concerned were the 10.25 a.m. up express from Aberystwyth, and the 10.5 a.m. down slow from Whitchurch. They met on the single line between the two named stations, and the head-on collision which ensued had, I regret to say, disastrous results. Eleven passengers were killed, and 36 others (including two railwaymen travelling as passengers) were injured more or less seriously. Of these, three subsequently succumbed to their injuries. The driver and fireman of the slow train, and the guard of the express, were also killed; whilst the driver and fireman of the express, and the guard of the down train, were seriously injured. The casualty list, therefore, totalled 17 cases of fatality and 36 of injury.

The express was drawn by Cambrian Railway Engine No. 95, type 4-4-0, with 6-wheeled tender, and comprised the following passenger stock:—

	Weight tons. cwts.	Length over all ft. ins.	Lighting.
Engine and tender, No. 95	76 17½	51 4	
L. & N.W.R., No. 8755, 6-wheeled van	13 0	32 0	Gas.
Cambrian R., No. 310, 8-wheeled composite coach	26 10	54 6	Gas.
Cambrian R., No. 324, 8-wheeled tea car	26 10	54 6	Gas.
G.W.R., No. 7730, 8-wheeled composite coach	27 11	57 0	Electric.
L. & N.W.R., No. 8093, 8-wheeled brake van	21 0	45 0	Gas.
L. & N.W.R., No. 3160, 8-wheeled composite coach	31 0	57 0	Electric.
L. & N.W.R., No. 6109, 8-wheeled composite brake	32 0	57 0	Electric.
Totals	254 8½	408 4	

The slow train was drawn by Cambrian Railway Engine No. 82 of similar type and included the following:—

	Weight tons. cwts.	Length over all ft. ins.	Lighting.
Engine and tender, No. 82	70 5	49 9	
Cambrian R., No. 233, 8-wheeled composite coach	23 10	45 0	Gas.
L. & N.W.R., No. 260, 8-wheeled third class coach	31 0	57 0	Electric.
Cambrian R., No. 333, 8-wheeled composite coach	26 10	54 6	Gas.
L. & N.W.R., No. 2850, 8-wheeled composite coach	19 0	42 0	Gas.
L. & N.W.R., No. 8396, 8-wheeled brake van	24 0	50 0	Gas.
L. & N.W.R., No. 8725, 8-wheeled brake van	23 0	50 0	Gas.
Totals	217 5	348 3	

Both trains were fitted with the vacuum (working equivalent 21-22 inches) automatic brake, working blocks upon the coupled engine and tender wheels, and upon all the wheels of the coaching vehicles, except the centre pair of No. 8755. The continuous brake was operative from each of the brake vans, as well as from the footplate of the engines.

The underframes of the coaching vehicles were steel throughout, except No. 2850, which was partly steel and partly timber.

The total overall length of the two trains was about 252 yards. After the collision, the space occupied, including wrecked stock, was 180 yards. In a space of about 50 yards, the two engines and tenders and five coaches (four of the express and one of the slow train), which normally occupy a space of about 115 yards, formed a tangled mass of wreckage. The boiler of Engine No. 95 was wrenched from the frame, reversed, and thrown south of the track, whilst the motion of the engine stood vertically over the rails. Engine No. 82, boiler included, had reared straight on end with its tender thrown southward. The frame of No. 8755 was hurled north of the track behind Engine No. 95, and on the top of the frame and at right angles to the

rails rested the frame and body of No. 310, which had swept the body work of No. 8755 into the wreckage of the engine. No. 324 had telescoped through No. 7730, the frame and body of the former having swept the whole of the inside of the latter coach, including passengers, into a mass of wreckage at the rear end. It was from this end of the fourth coach that the great majority of the bodies of those killed were recovered. The leading end of No. 8093 was broken in, but the coach was not otherwise damaged. The last two vehicles of the express stood on the rails practically undamaged. In the slow train, the vehicle behind the engine (No. 233) was totally destroyed, the frame being thrown northward and the roof southward of the track. The two leading compartments of No. 260 were wrecked, and the bogies knocked away backward, the coach otherwise remaining intact. The four last coaches stood on the rails practically undamaged, except in respect of damaged or broken buffers.

Portions of the engines, steel frames, etc., after the collision were found to be so entangled, and in such a perilous position, that oxy-acetylene plant was utilised for cutting up the steelwork into weights that could be handled by the steam crane.

It will be noticed that nine out of the 13 coaching vehicles were gas lighted. But fortunately no fire started in the wreckage; nor was evidence found of explosion, due to escaping gas.

The following vehicles on the two trains were fitted with fire-extinguishing and first-aid appliances, salvage tools, etc. :—

Express, G.W.R., No. 7730, and L. & N.W.R., Nos. 8093 and 6109.

Slow train, L. & N.W.R., Nos. 8396 and 8725. The contents of these vehicles included :—

Fire extineteurs ..	..	..	..	..	..	..	5
Bafflers for extinguishing gas jets	..	..	..	..	..	..	7
Buckets ..	..	..	..	..	..	..	6
Lamps ..	..	..	..	..	..	..	4
Ladders ..	..	..	..	..	..	..	4
Ambulance boxes and cabinets	..	..	..	..	..	..	5
Hammers ..	..	..	..	..	..	..	4
Axes ..	..	..	..	..	..	..	9
Crowbars ..	..	..	..	..	..	..	9
Saws ..	..	..	..	..	..	..	6

The equipment generally appears to have been adequate, to meet the demands for tools and appliances necessary to extricate the killed and injured from the wreckage, and for first-aid purposes.

The request for medical assistance was promptly met, and doctors from Newtown were on the scene within about 30 minutes of the time the collision occurred.

Description.

Abermule Station, on the Company's main line to Aberystwyth, lies about 10 miles by rail south-west of Welshpool, and $8\frac{1}{2}$ miles north-east of Moat Lane Junction. The railway is single between Welshpool and Newtown, 3 miles 72 chains south-west of Abermule; and there are loop passing places at Abermule and at Montgomery, $3\frac{3}{4}$ miles north-east. The single line branch to Kerry junctions with the down loop line at Abermule.

Attached to the report is a plate (Appendix III.), upon which will be found a general plan (Fig. 1) of the railway between Abermule and Newtown, showing the site of the collision and relative curvature and gradients; also a plan (Fig. 2) of the lay-out and general arrangements at Abermule Station; and, on a larger scale, a plan (Fig. 3) of the platforms, station buildings, booking office, etc.

It will be seen that the collision occurred at a point one mile south-west of Abermule Station, a few yards beyond the tangent point of a curve to the south with a radius of 50 chains. The formation of the railway over this mile of road is on a low embankment, and there is nothing, therefore, to obstruct the view. The curve, however, lies in a cutting through side-long ground, the slopes of which on the south side rise in height from 3 feet at the site of the accident, to about 16 feet at the overbridge shown on Fig. 1. The curvature and cutting restrict the view obtainable along the curved section of line to a distance of about 300 yards.

Appendix III.
CAMBRIAN RAILWAYS.
COLLISION AT ABERMULE 26TH JAN. 1921.

FIG.1.

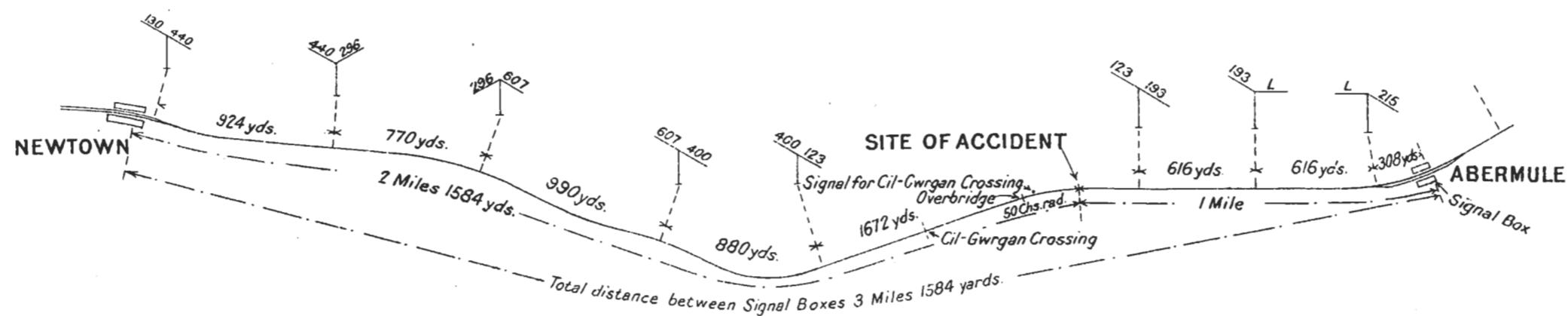


FIG.2.

ABERMULE STATION YARD

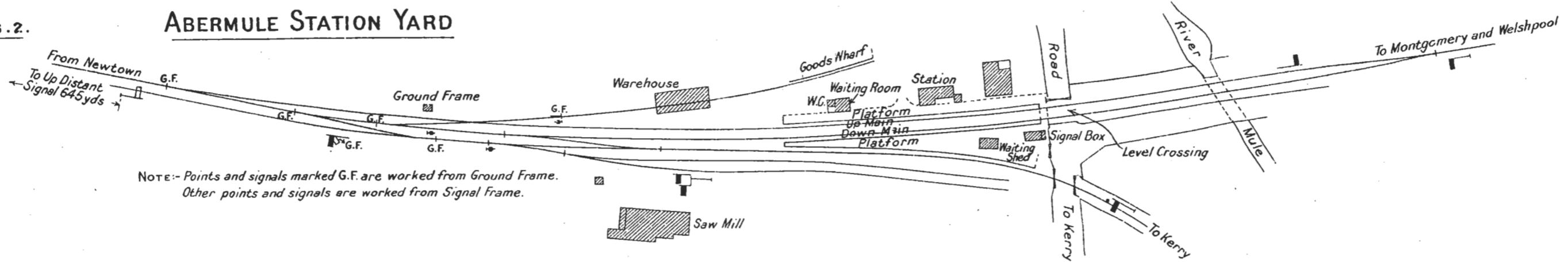
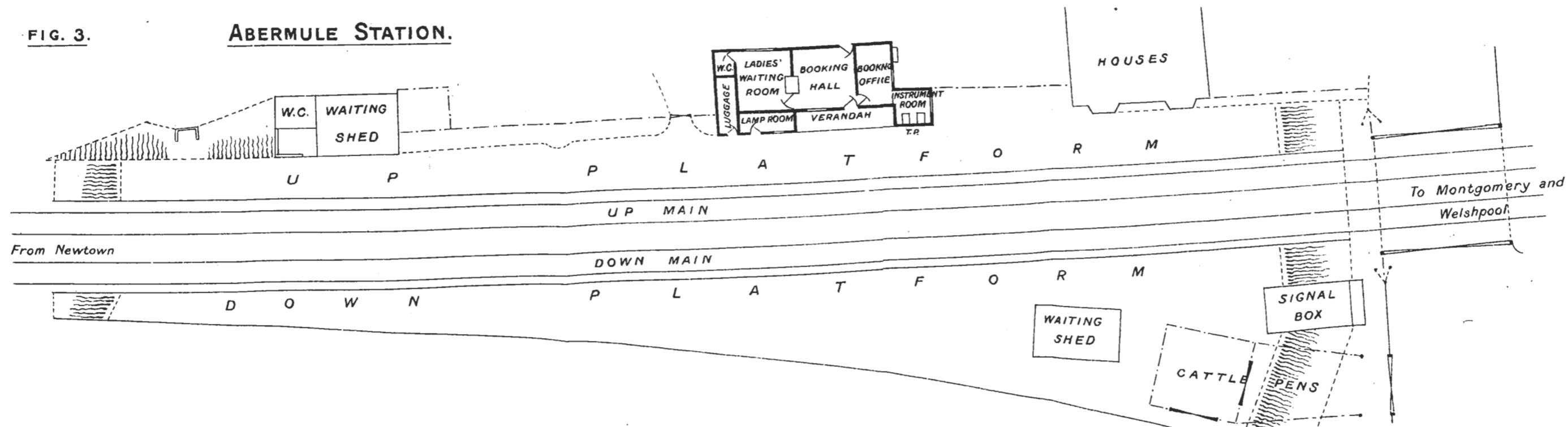


FIG.3.

ABERMULE STATION.



Reference to the plan of the station lay-out will show that the points and signals at the north-east end of the yard are worked from a signal-box, sited at the north-east end of the down platform, and adjoining a road level crossing. Also that the south-west loop points are worked, and the down advance starting signal is slotted, from a separate ground frame, which is controlled by a mid-way bolt from the main signal-box. The signal-box contains a frame with 18 working and four spare levers. The lever controlling the ground frame has three positions—a mid-way position releasing the ground frame, a forward position locking the ground frame with the south-west loop points set in their normal position, i.e., for the up loop line, and a reverse position locking the ground frame with the loop points reversed for the down loop line. The ground frame has six working levers and one spare.

Measured from the signal-box the approximate distances to the undermentioned places, etc., are as follows :—

East end loop facing point	155 yards N.E.
East end timber crossing between platforms	4 yards N.E.
Booking hall on up platform	35 yards S.W.
West end of up platform	90 yards S.W.
Down starting signals	125 yards S.W.
Ground frame	232 yards S.W.
Down advance starting signal	263 yards S.W.
West end loop points	332 yards S.W.
Up home signal	349 yards S.W.
Up distant Signal	994 yards S.W.
Site of collision	1 mile S.W.
Down signal for Cil Gwrgan level crossing	1 mile, 220 yards S.W.
Bridge over railway	1 mile, 290 yards S.W.
Cil Gwrgan crossing	1 mile, 800 yards S.W.

This single line section has been worked by the electric tablet system since 1890, the type of instrument in present use being Tyers No. 6. The method is one of those which has been approved for single line working, and if the instruments are used fairly, and in accordance with instructions, the possibility of accident has been considered to be so remote as to be negligible. It will not be necessary in this case to do more than give a general outline of the working involved.

Each section of single line has a pair of electrically controlled instruments, one at each end of the section. The tablets contained in this pair of instruments cannot be placed in an instrument belonging to an adjoining section ; for though the size and outline is similar, the tablets of one section differ from those of another in having circular, square, or triangular portions cut out of the centre. The tablets also bear, in raised lettering round them, the names of the two crossing places to which they are applicable, i.e., Montgomery-Abermule, or Abermule-Newtown.

The tablets can only be withdrawn from an instrument at one end of a single line section by co-operation with the man in charge of the tablet instrument at the other end of the section. When one tablet has been taken out, the electric circuit controlling the two instruments for that section is broken down, and a second tablet cannot be withdrawn from either of the two instruments until the first tablet has been inserted in the relative instrument at the other end of the section, or has been returned to its original instrument.

No train is permitted to enter on a section of single line unless the tablet of that particular section is in possession of the engineman. The movements of trains are also controlled in the usual way by fixed signals.

The two tablet instruments at Abermule, for the Montgomery and Newtown sections respectively, are kept in a room (*vide* Fig. 3) adjoining the booking office and not in the signal box. This has been a common arrangement at roadside stations on single lines in Great Britain, where traffic is insufficient to justify the employment of a signalman with no other duties, and to ensure that the instruments are under the direct supervision of the stationmaster.

In Appendix I. will be found an extract from the Company's Appendix to the Working Timetable, giving the Regulations for train signalling on single lines of railway worked on the electric train tablet system.

REPORT.

This deplorable accident is unique in the annals of British Railways. Such a tale of failure in broad daylight, and of misunderstanding on the part of so many men, would have been incredible, prior to the accident. Indiscipline and slipshod methods of custody and transference of tablets, on the part of the traffic staff, combined with failure on the part of enginemen to examine tablets, could alone have made this disaster possible.

I.--Adequacy of traffic staff at Abermule.

The recent reduction in railwaymen's hours of working, the necessity for avoiding overtime, and for economy in working, have, during the past two years, caused alterations both in the number of personnel employed on traffic duties and in the arrangement of those duties. It is perhaps necessary in this case to examine first the existing arrangements at this station, and the amount of traffic, to determine whether the staff is adequate for the safe conduct of the work.

Abermule is open for traffic movements between 3 a.m. and midnight. The movements—passenger, goods, and light engine—total on the average 23 per week-day, there being 22 such movements on Wednesdays, Fridays and Saturdays, and 24 on other week-days. The 26th January was a Wednesday, and the booked movements were :—

Down passenger trains	..	..	..	7
Up passenger trains	..	..	..	8
Down goods trains	..	..	..	4
Up goods trains	..	..	..	3
Light engines	..	..	..	Nil

These movements are distributed as follows :—

		Total No. of trains.	Greatest No. in any one hour.
Between 4 a.m. and 9 a.m.	5
„ 9 a.m. and noon	5
„ 12 and 2 p.m.	Nil
„ 2 p.m. and 8 p.m.	9
„ 8 p.m. and midnight	3

On Tuesdays there is one additional down passenger train and one light engine movement. On Mondays and Thursdays there are two light engine movements. Of the 15 daily passenger trains, 11 are booked to stop at, and four to pass, Abermule Station. There are only two daily occasions when trains cross at Abermule, viz., about 12 noon and 4.8 p.m., and in both cases passenger trains are concerned.

Between the hours of 9 a.m. and 8 p.m. a stationmaster is on duty and in charge. He is assisted by a signalman, except between 12 noon and 2 p.m., during which hours there are no booked movements. From 3 a.m. to 9 a.m., and from 8 p.m. until midnight, a signalman is in charge of the station. There are two signalmen employed, one turn of duty being from 3 a.m. to 12 noon, and the other from 2 p.m. until midnight. In each case an hour is booked off for meals. There is a booking clerk on duty between 9.30 a.m. and 8.30 p.m., with meal intervals amounting to 1½ hours. A porter is also on duty from 8 a.m. until 6 p.m., with meal intervals. There is only one (up) passenger train booked to stop at the station before 8 a.m., and none after 8.15 p.m.

The porter and booking clerk have the same dinner interval, i.e., between 11 and 12, and the stationmaster is free to arrange his dinner hour to suit his duties.

Before the war, the traffic staff at Abermule included one signal-porter, one porter and one booking clerk, in addition to a stationmaster—one less than at present, with longer hours of duty.

The traffic movements detailed above are clearly at no period, during the hours when the station is open, of such frequency as to prevent the regulations in connection with the custody and transference of tablets from being given full effect to by the stationmaster, or the signalman on duty, as the case may be. The conditions are never such as to necessitate the employment of either the porter, or the clerk, in the performance of duties for which the stationmaster, or the signalmen, are alone responsible.

In Appendix II. will be found, in tabular form, the booked timings of the two trains concerned in this case, the average speeds between booked stopping places, and other information. It will be observed that the trains are booked to cross each other at Abermule at 12.5 p.m., and the schedule provides for holding the down train at Abermule from 11.57 a.m. (Bradshaw) until 12.5 p.m., to allow this crossing.

II.—Events leading up to the collision.

The evidence in this case is attached, and the sequence of events leading to the collision will be found mainly in the statements made by relief-stationmaster Lewis, signalman Jones, porter Rogers, and booking-clerk Thompson.

About 11.50 a.m. Rogers and Thompson were having their dinner in the booking-office; Jones was also there in the adjoining instrument and telegraph room. Lewis was away at dinner, and during his absence Jones was in charge of the station. At 11.52 the down slow train was belled from Montgomery by signalman Humphreys. Jones accepted the train, and released a tablet for it to proceed to Abermule. The train left Montgomery at 11.53 (four minutes late on schedule time), but was booked by Jones in the train register book at Abermule as "entering section" at 11.55. Jones then telephoned to Moat Lane Junction to enquire where the up express was, and was informed that it had just passed. He then left the booking office in the expectation that the express would pass the down train as usual at Abermule. He told Rogers, as he left the booking office, that the down train had left Montgomery three or four minutes, and that the express had left Moat Lane Junction. Rogers and Thompson were thus left in the booking office by themselves. Lewis appears to have returned from his dinner after Jones had left the booking office, but no information was given, or message sent, to him either by Jones or Rogers about the position of the express, although, in accordance with Jones' evidence, the relief-stationmaster was standing outside the entrance to the booking hall when Jones left the booking office.

At 11.56 a.m. the express was belled from Newtown. Rogers thereupon went into the tablet room, acknowledged the bell signal, and plunged on the Newtown-Abermule instrument to release a tablet for the express to proceed to Abermule. He did not inform either Lewis or Jones what he had done, but, in accordance with his evidence, started off for the ground frame at the south-west end of the station yard.

Jones, after leaving the booking office, went to the level crossing, closed the gates across the roadway, then went into the signal-box and lowered the down home signal for the slow train. The lowering of this signal, when the slow train was not in sight, and in all probability after the express had been accepted by Rogers, was a breach of block working. More particularly so, because the south-west loop facing points, as will be seen later, lay for the down loop line. At 12.2 p.m., five minutes late, the down train is stated to have arrived, and Jones then replaced the home signal to danger, and went out of the signal-box on to the down platform.

As the engine of the down train passed over the timber crossing at the east end of the station platform, Thompson, who evidently was waiting on the up platform, jumped off into the six-foot way, and took the tablet holder from one of the enginemen. Thompson agreed that it was the stationmaster's practice to take the tablet from this train, but that as Lewis was not there to do it, and Jones was in the signal-box, he took the tablet holder, as he had done on other occasions. Thompson then returned to the up platform, and went into the booking hall, with the intention of going into the instrument room to replace the tablet he had received from the down train in the slide of the Montgomery-Abermule instrument. But he met relief-stationmaster Lewis coming into the booking hall from the yard entrance, and therefore handed him the tablet holder, saying, "Change this tablet, Frank, while I go and get the tickets." He then turned back, crossed to the down platform, and collected the ticket of the one passenger who alighted from the down train. He did not see what the stationmaster did after he had handed him the tablet holder.

Lewis went to his dinner on this morning later than usual—about 11.35 a.m.—and returned about 11.55. On his return, in accordance with his statement, he went straight into the booking office, where he found Rogers and Thompson, and also sub-inspector of permanent way Thomas. The latter immediately engaged his attention by enquiring for a wagon for loading stakes. The matter was of some urgency, as it was necessary for Thomas to travel by the down train when it left Abermule. Lewis, therefore, went out with Thomas into the yard to see if a suitable wagon was available. He did not go further than the coal wharf, about 50 yards distant, and expected to return in time to take the tablet from the down train when it arrived, and attend to

tablet had been issued for the down train, nor was he at any time informed that a tablet had been issued by Rogers for the express. Whilst he was at the coal wharf with Thomas, his attention was called to the down train by the noise of its arrival. So he ran back to the booking office. As he entered the booking hall, he met Thompson, who handed him a tablet holder with the words, "Take the tablet for the down train, he is going on." Lewis understood that Thompson was going to collect the passengers' tickets of the down train, and assumed that he had changed the tablet for the down train under the instructions of the signalman. He asked Thompson, "Where is the express?" and received the reply, "About Moat Lane." He assumed that the express was late, as it was then after 12 o'clock, and knew that the margin of time was small for the down train to reach Newtown, and pass the express there without delaying the latter. He therefore told Thompson to go to the signal-box, and tell Jones to pull off his signals for the down train. He then ran along the up platform, and crossed the up road to where the engine of the down train was standing at the west end of the platform. He handed the tablet holder, given him by Thompson, to the fireman without looking what tablet it contained.

Rogers, after entering the time in the train book, 11.56, when he released the tablet for the express, left the booking office to go to the ground frame at the south-west end of the station yard, in order to set the road for the express. This was his ordinary duty, and about three minutes would be occupied in reaching the frame. It may be assumed, therefore, that he arrived at the ground frame about 12 o'clock. On his arrival, he found that the loop points were set for the down road, and when he tried to alter their position, was unable to reverse the lever. He was at a loss at first what to do, and thought that possibly the rod working the points might be broken. After some hesitation, he went out on to the up road, and saw the down train standing at the platform. He was just going to shout to the signalman to release the lever in the signal-box working the mid-way bolt, when he saw the stationmaster standing in the six-foot way, opposite the engine, signalling with his hand "right away" to the train. The engine whistle was then sounded. He therefore assumed that something had gone wrong with the express at Newtown, that the crossing place of the two trains had been changed to Newtown, and that since the stationmaster was giving "right away" it must be all right. So he returned to the ground frame, and pulled over the lever working the control on the down advance starting signal, which he had replaced in the normal position, in order to move the points, when he first arrived at the ground frame.

Rogers expected that signalman Jones, after the arrival of the down train, would go over to the tablet instrument room to obtain a tablet for the express to run to Montgomery. He also expected that Thompson would receive and book the "entering section" bell signal for the express on its receipt from Newtown. This bell signal was sent from Newtown by station-foreman Brock at 11.59 a.m., when the express left the station. It was not acknowledged from Abermule, and there is no relative entry in the train book. It is, therefore, clear that there was no one in the booking office, or instrument room, at Abermule, when this bell signal arrived, and no one was aware that the express had left Newtown.

The driver of the down train was oiling his engine at the moment when the tablet holder was handed to his fireman by relief-stationmaster Lewis. It is clear that neither he nor the fireman could have examined the tablet before the train started from Abermule. It is also clear that neither Lewis, Jones, nor Thompson could have looked at the tablet instrument for the Abermule-Newtown section, otherwise they would have seen the indicator showed that a tablet had been withdrawn for an up train. After the down train had started (about 12.3 p.m.), presumably when he returned to the booking office to send the "entering section" bell signal for the down train to Newtown, and the "out of section" bell signal to Montgomery, the terrible mistake that had been made was discovered by Thompson, and Lewis realised that he had given the Montgomery-Abermule tablet to the down train. Lewis telephoned to Newtown to ask if the express had left, and was informed by Brock that it had left at 11.59 when he had sent the "entering section" bell signal. A vain attempt was made to attract the attention of the enginemen of the down train, by lowering and raising the up distant signal, but probably by the time this was attempted, the train had passed the signal post, about 660 yards from the loop points.

Driver George Jones and fireman Albert Evans, enginemen of the down train, were both killed in the collision. Passenger guard Edwin Chetwood took charge of the train at Oswestry. He tested the continuous brake before leaving Oswestry, and

rode in the last vehicle but one (No. 8396). In accordance with his watch, the train arrived at Abermule at 12.2 p.m. (five minutes late), and left at 12.4 p.m. The only member of the traffic staff he saw at Abermule was clerk Thompson, who took the letters and papers Chetwood handed to him. Both the starting and advance signals were "clear" when the train started. Chetwood is confident that the continuous brake was not applied before the collision occurred. This point is supported by the evidence of chief traffic inspector George, who rode in the fourth carriage (No. 2850) of the down train. The latter did not consider that the train could have attained a speed of more than 20 miles an hour at the moment of impact.

The up express was driven by John Pritchard Jones, assisted by passed-fireman John Owen. This train arrived at Newtown at 11.57—on time. The tablet for the Newtown-Abermule section was handed to Owen by foreman Brock. Owen examined the tablet, found it correct, and passed it to his driver for examination before hanging the holder on the hook. Steam was shut off in the usual way at Cil Gwrgan Crossing, when the train had attained a speed of from 45 to 50 miles an hour. The engine was passing under the road overbridge about 290 yards from the scene of the collision, when Jones, who drove from the right-hand side of the footplate, saw the steam of the approaching down train. A moment later he saw the front of the engine at a distance of 300 to 350 yards, and fully applied the continuous brake. He remained on the footplate until the engines were about three lengths apart, and then jumped off to the right. Owen's attention was first attracted by his driver sounding the engine whistle and then applying the brake. He put his head out of the cab on the left side, saw the approaching engine and noticed it was steaming. He followed his driver's example and jumped off the engine on his side at a distance of two engine lengths, when he saw that a collision was inevitable. Driver Jones thought that steam was still applied to the engine of the down train when he left his own engine, and that the speed of his own train had been reduced to about 20 or 25 miles an hour.

Owen noticed that the continuous brake was acting well on his train, but estimated the speed of the train when he jumped off the footplate to be not less than 30 miles an hour.

When Owen recovered, he found himself on the ground just behind the second vehicle (No. 310) of his train, which was lying across the railway on top of the first. He saw driver Jones on the opposite side just behind and underneath the third vehicle, which was leaning over towards the slope of the cutting. He got across the framing, and found Jones more seriously injured than himself, and anxiously enquiring whether they had the right tablet. He assured him on the point, but a little later, as his driver was still anxious, he went to look for the tablet and crept under the frame of No. 7730 for the purpose. After a little search he found both tablet holders lying on the ground to the left (north) of the track alongside the wreckage of the two engines. He picked them up and found that one of the tablets for the Montgomery-Abermule section had evidently been carried by the down train. He then returned and showed them to his driver to relieve his anxiety. He subsequently handed the tablet holders to traffic controller Morgan, who travelled in the down train. Morgan eventually passed them for custody to chief traffic inspector George. The latter, immediately after the accident, returned on foot to Abermule, where he arrived at 12.18 p.m. and arranged by telephone for the dispatch of medical and nursing assistance from Newtown. There is full proof that the tablets recovered by fireman John Owen were those actually carried by the engines of the two trains; the express train tablet being No. 18 for Newtown-Abermule section, and the down train tablet No. 18 for Montgomery-Abermule.

III.—Conclusion.

The evidence, therefore, clearly establishes the following conclusions:—

(a) that a correct tablet was issued at Newtown, with the co-operation of the traffic staff at the other end of the single line section, for the up express to travel to Abermule.

(b) that the cause of the collision was the departure of the down train from Abermule with a wrong tablet in possession of the enginemen.

IV.—Responsibility.

By reference to the Regulations for Single Line Working (Appendix I.), it will be seen that responsibility for ensuring that every train carries a tablet proper to the section over which it moves is placed upon both the traffic and locomotive staff concerned. Security, therefore, depends upon two equally important strings.

(1) Ultimate responsibility for leaving a tablet station with "the tablet for that section of the line over which he is about to run" is laid upon the engine-driver. "He must also keep the tablet under his own charge until he reaches the end of the section, when he must give it up to the signalman or other duly authorised person." In common practice, the duty of exchanging single line tokens is performed by firemen, who more commonly occupy the left side of the footplate, and are less likely to be engaged in other duties. But this does not excuse the driver from the duty of examining the token, and assuring himself of its correctness, before it is placed on the hook provided for the purpose.

Driver George Jones and fireman Albert Evans of the down local train clearly failed on this occasion to fulfil the duty of examination, and lost their lives owing amongst other reasons, to this failure. Had the deceased been observing the road, and applied the continuous brake when they sighted the express, there can be no doubt that the effects of the collision would have been mitigated. Half of the responsibility for the collision is theirs. Enginemen will no doubt take to heart the lesson illustrated by this sad occurrence, and regard the duty of examining single line tokens on all occasions as one of primary importance in their own as well as in the public interest.

(2) Turning now to the conduct and responsibility of the traffic employees at Abermule. The Regulations lay down:—

(a) that the signalman, or other person in charge of the tablet working for the time being, is the "sole person" authorised to take a tablet from, or place it in, the instrument; and

(b) that, unless some other person is specially appointed to the duty, the signalman is the sole person authorised to receive a tablet from, or deliver it to, the engine driver.

The practice, as it existed at Abermule Station, in regard to these very plain rules for the custody and transference of tablet, has a distinct bearing upon the case, and must therefore be investigated.

It is explained in the evidence of Mr. Warwick, Superintendent of the Line, that, at any tablet station, the only persons authorised to use the tablet instrument and bells, and receive and deliver tablets, are those members of the staff who have been passed by the District Traffic Inspector as having qualified in the Regulations for single line working, as well as in the General Rules and Regulations. At Abermule those so qualified were relief-stationmaster Lewis and the two signalmen. In September, 1915, the special attention of the traffic staff was called to the necessity for observance of the Regulations for the custody and transference of tablets. Special instructions were also issued to stationmasters, in the Weekly Train Notice No. 23, dated 30th May, 1919, to be on duty for the passage of express trains, and personally supervise the working.

On the date of the collision, the permanent stationmaster, John Parry, was away on leave. He had been in charge at Abermule for nearly four years, and left duty on the 15th January for a fortnight's holiday. During his absence Lewis acted as stationmaster. The latter was well acquainted with the routine work, having previously acted on other occasions at Abermule as stationmaster, signalman, and guard.

Parry's evidence is to the effect that porter Rogers, though not technically a "duly authorised person," was permitted by him to use the tablet instruments, and answer the bells, but only with the specific authority on each occasion either of himself or of one of the signalmen, and under direct supervision. Rogers, in his opinion, was thoroughly acquainted with tablet working, and the restricted permission accorded to him was for the purpose of instruction. Thompson had never any authority to touch the tablet instruments. He defined it, in the absence of the relief-stationmaster, as the signalman's duty to have taken the tablet from the down train on its arrival, and as Rogers' duty to have informed the signalman when the express was belled from Newtown. In such conditions as existed, there was certainly no authority for Rogers to accept the express, or release a tablet.

Lewis, on the point of existing practice, stated that he made no alteration in the working arrangements at the station, or in the duties of the traffic staff, when he took over temporary charge of the station. It was common practice before he took charge of the station for Thompson to change tablets, and he merely cautioned him to be careful in his use of the instruments. For this reason he assumed that, when Thomp-

son handed him the tablet holder after the down train had arrived, he had previously changed the tablet. Rogers had on other occasions released tablets for trains as he did for the express. The serious mistake he made was in not telling either the signalman or himself that he had done so on this occasion. It was his (Lewis') practice to take the tablet from the down train when it arrived, and to place it in the instrument.

In accordance with his own evidence, signalman Jones did not know, or pretended not to know, who were the duly authorised persons for using the tablet instruments, but agreed that Rogers used them frequently. Rogers frankly admitted that he had both released tablets when trains were belled, and obtained tablets, in the absence of both the stationmaster and the signalman. He was not aware that only those who had been examined and had qualified for the position of signalman, or porter-signalman, were authorised to use the tablet instruments. Both the stationmaster and signalman were aware that he issued and exchanged tablets in their absence.

Thompson also stated that he had been instructed on more than one occasion by signalman Jones to get a tablet out of the instrument for a down train—apparently to save Jones the trouble of crossing to the up platform and doing it himself. He had also, although not authorised to do so, collected tablets from trains when there was no one else on the spot. Further, during the time that Parry was stationmaster, he had got tablets out for him without any special instructions to do so. Stationmaster Parry had shown him how to use the tablet instruments. This evidence he adhered to in Parry's presence.

In view of these statements, of the conduct of Rogers and Thompson on this particular occasion, and of the evidence afforded by the handwriting of some of the entries in the train book, it is impossible to arrive at any other conclusion than that the Regulations in respect of the custody and transference of tablets had, for some time previous to the collision, not been properly observed at Abermule. Both Rogers and Thompson, lads of 17 and 15 years of age, were permitted, with the knowledge of stationmaster Parry, relief-stationmaster Lewis, and signalman Jones, to use the instruments, reply to the bells, book the entries in the train-book, and receive and deliver tablets. They were sometimes instructed by Jones to exchange tablets, in order to save others the trouble of doing so. A slipshod, happy-go-lucky practice grew up, which rendered possible the extraordinary series of assumptions and misunderstandings which alone made this disaster possible.

The failure of the second (traffic) string, upon which security depended, originated, in my opinion, with this irregular practice in the custody and transference of tablets. For the growth of this practice, responsibility rests primarily upon stationmaster Parry. It is not clear that the traffic inspection staff, and in particular inspector Lloyd, are free from responsibility in the matter. Even if the practice existed, this does not relieve Lewis of responsibility for failing to check it, or signalman Jones for apparently encouraging it.

In view of the Company's explicit instructions to stationmasters to give personal attention to the crossing of these two trains, the first mistake Lewis made on this particular day was in taking his dinner later than usual, with the result that he did not return to the office until 11.55 a.m., ten minutes after the usual time. His second mistake was to leave the office with sub-inspector Thomas without first finding out where the express was, and arranging to be called as soon as it was belled. The accident would never have occurred if he had learnt on his return to the office that the express had already passed Moat Lane Junction. Thompson has a slight hesitation in his speech, and it is possible that this may account for Lewis misunderstanding what Thompson said to him when he was handed the tablet holder. That he did not examine the tablet in the holder was his most serious failure. Lewis gave his evidence in a straightforward manner, and acknowledged full responsibility for working at the station, and for his failure to examine the tablet.

Jones, on the other hand, was a less credible witness. He appeared to consider himself entirely free from blame in the matter. But it was his duty, in the absence of the stationmaster, to receive the tablet from the down train, and if he had performed this duty, the accident would not have happened. He knew at 11.55 a.m. that the express had passed Moat Lane Junction, but gave no information to Lewis. Nor did he subsequently take any action to find out what had happened to the express, though he knew that at 11.55 a.m. it was running to time, and that unless an actual breakdown had occurred, it should pass the down train at Abermule. His responsibility, in my opinion, is but little less than that attaching to Lewis.

With regard to Rogers and Thompson, they were, I believe, both well-intentioned lads, but not of an age to understand the danger that may arise from dual responsibility, ill-considered action and careless speech. Rogers is seriously to blame for not informing Lewis or Jones when he accepted and issued a tablet for the express. He had ample time to do this before proceeding to the ground frame, and if he had done so the series of misunderstandings leading to the collision would not have happened. Thompson is also to blame for leaving the booking office with no one in charge, before it was necessary, and for taking the tablet from the down train, seeing that this was the duty of the stationmaster or the signalman. He was also responsible for misleading Lewis by telling him at 12.2 p.m. that the express was about Moat Lane, when it appears that he was aware that it had passed Moat Lane seven minutes earlier.

The case as a whole is an illustration of how fatal misunderstandings may arise from allowing a number of people to participate in the use of single line instruments, and in the duty of receiving and handing tablets, and as such it forms an object lesson to all traffic inspectors, stationmasters and signalmen concerned with single line working, of the importance of the strictest discipline in carrying out the regulations for the custody and transference of tablets.

V.—*Methods for increasing safety.*

Many suggestions have been made to increase the security of single line working with the electric tablet or staff. These divide themselves into three main heads :—

(1) Proposals for rendering the tokens for single line sections more distinctive. Different colouring is suggested ; red, green, blue, etc., for each section. I do not think that this is likely to prove helpful. In the first place, colouring fades, is easily begrimed, and frequent repainting would be necessary. In the second place, there is no certainty that an engine driver or fireman will memorise the colours applicable to different sections, more particularly when on a line like the Cambrian Railways, there are upon the main road four lengths of single track, with a different number of sections in each, interposed between lengths of double track.

Another and better suggestion is to use electric tablet and staff instruments alternatively. For Railway Companies who have both tablet and staff working, it would be possible to rearrange the instruments so that they shall be used alternatively. It has been suggested also that for this purpose an exchange of instruments might be made between companies who have themselves only one system of working. But even so, it is doubtful if the suggestion would necessarily provide additional security ; whilst for exchanging tokens at speed it would possess disadvantages.

Reliance must, I think, be ultimately placed, so far as enginemen are concerned, upon their examining the tokens sufficiently to read the names of the stations or posts. These are clearly enough shown in raised lettering on the tokens. If neither the person responsible for handing the token, nor the one who receives it, makes any examination, no differentiation or distinctive marking will, in my opinion, prove an additional security. The views expressed in the evidence of fireman John Owen support this opinion.

(2) Another proposal is to place all electric token instruments in the signal-boxes, and thereby ensure, so far as possible, that only one person shall be responsible for working them. Had this arrangement existed at Abermule, the series of misunderstandings between the traffic staff which led up to this accident would probably not have occurred. On the other hand, in the only other case of a head-on collision on a single line—also on the Cambrian Railway, in January, 1917—the instruments at each end of the single line section concerned were placed in the signal-boxes, and immunity from a similar accident was not thereby secured. Some signal-boxes are not large enough to contain two tablet instruments, and enlargement would be necessary. At roadside stations, the arrangement may also make it difficult to distribute the duties of the traffic staff without increasing the number employed.

(3) The third group of proposals covers interlocking, either (a) mechanical, or (b) electrical, which will ensure that, unless a token is withdrawn from the instrument applicable to a section of single line, the starting, or advanced starting, signal giving access into that section cannot be lowered. This is perhaps the best

method of obtaining additional security, always assuming that the instruments are properly used, and the driver obeys the fixed signals. The method has been adopted on one of the main Railways, and is in use at special places on other Railways. But it is not clear that interlocking of this nature would have prevented the previous head-on collision referred to in the last paragraph. The necessity may also arise for additional running or ground signals to allow of shunting movements outside loop points.

So far, however, this interlocking has not been made a requirement by the Inspecting Officers. Single line working by any of the approved methods has, during the past 30 years, provided so high a degree of security on British railways, that the necessity for going to the additional expense of further improving safety conditions has not so far been recognised.

The circumstances attending this accident, however, justify reconsideration of the general question, especially in respect of stations which are passing places, as well as electric tablet or staff posts, on single lines of railway. Where for one or other of the reasons above mentioned, it is not feasible to move the instruments from the booking office into the signal-box, it is recommended that electric interlocking should be provided between the single line token and the starting, or advance starting, signals which control movements into the relative single line section.

It does not appear at the present moment, having regard to the degree of security attainable when due regard is paid to regulations for single line working, that a general recommendation to provide this interlocking at all tablet or staff posts is justifiable. But in special circumstances, e.g., at places where single line tokens are exchanged at high speed, it will be advisable to provide such interlocking even when instruments are located in signal-boxes. It will be for Companies to diagnose the necessity for such an addition in each case.

VI.—Telescoping.

The serious character and length of the casualty list in railway accidents, particularly in collisions, depends largely upon whether, and the extent to which, telescoping of carriage stock takes place. In this instance, the number of lives lost would have been reduced by more than one-half, if the rear end of the third vehicle (No. 324) of the express had not mounted the front end of the fourth vehicle (No. 7730), resulting in the complete telescoping of the fourth vehicle. It would be easy to quote cases, on the one hand, where collisions have occurred at quite inconsiderable speeds, e.g., with buffer stops, in which the forces due to the momentum of the train have been absorbed by the breakage of buffering, straining of under frames, etc., and where, consequently, no lives have been lost, or serious injuries inflicted. On the other hand, there are many examples where these ill-results have followed a collision of the same character, owing to one or more compartments being crushed in as a consequence of over-riding of adjoining carriage frames. Whenever this over-riding of under frames takes place, the line of least resistance is that offered by the light body work of the coach which is mounted upon. Shearing of the wooden uprights which support the roof of the coach by the shallow steel head-stock takes place, and the crumpling up of the partition work of the coach is certain to follow.

The principal causes which lead to over-riding are as follows:—

1. The presence of light vehicles marshalled on the train with heavy bogie stock. The pressure exerted by the heavier stock may lift one or both ends of the light vehicle off the rails.
2. Tilting of a coach, owing to derailment of wheels at one end.
3. Long buffering of carriage stock, which allows freedom for vertical movement.
4. Shape and curvature of the faces of carriage buffers.
5. Inequality of level of buffers, owing to heavy loading, age of springing, wear of tyres, etc.
6. The effect of the sudden and powerful application of the continuous brake, which tends to throw the body weight of a vehicle on to the foremost wheels.

It is possible to eliminate entirely the first of these causes, by arranging for uniformity, as regards weight and type, of stock. In the case under consideration, there was a light six-wheeled van marshalled behind the engine of the express. In an accident of this nature, however, a head-on collision, when it may be assumed that the

speeds of the express and local trains at the moment of collision were possibly 30 and 20 miles an hour respectively, the enormous forces due to their joint momentum would necessarily be largely expended on the engines, and the vehicles immediately in their rear. As might be expected, the two engines concerned rose vertically off the rails, and were reduced to a mass of wreckage ; whilst the tender and the first vehicle in the case of each train, were practically destroyed. I do not think, therefore, that the presence of this light six-wheeled van on the express was the origin of the telescoping of the third and fourth vehicles. The leading end of the second vehicle on the express (No. 310), owing to the right hand curvature, would naturally be derailed to the left, and its rear end was pushed off the road to the right by the weight of the coaches behind it. The leading end of the third vehicle followed, and dropped, its supporting bogie being knocked away, with the result that its trailing end was tilted upwards, and over-riding of the front end of the fourth vehicle followed. Freedom of the rear end to lift would be possible, owing to the long buffering ; whilst the effect of the continuous brake which had been applied before the collision actually took place would increase the tendency of the rear end of the third vehicle to lift.

Ten years have elapsed since attention was called to the desirability for action to reduce the liability of passenger stock to telescope, as the result of the serious accidents which occurred in December, 1910, and January, 1911, at Willesden Station, Hawes Junction and Pontypridd. It was suggested that action might be taken to reduce this liability in the following directions :—

- (a) Uniformity of a type and weight of coaching stock.
- (b) Improvement in buffering, with a view to the better absorption of shock effects, and to counteract the tendency of vehicles to lift under pressure.
- (c) Deepening of head-stock by an addition to the steel frame.
- (d) The adoption of anti-climbing devices to prevent vertical movement between coaches.

Railway Companies at the time were, however, generally not in favour of taking action in the directions suggested. It was considered that if telescoping were precluded, disastrous effects of a worse character would result. On this point I agree fully in the opinion held by Sir Arthur Yorke that, so far as the safety of passengers is concerned, the most dangerous manner of absorbing the forces due to momentum in a collision is to allow the frame of one carriage to mount another. Instances have occurred recently of carriages being overturned, and actually dragged for a distance of 50 to 100 yards along the ground on their sides, without any case of fatality or dangerous injury to passengers.

Some action, however, has been taken by individual Companies during recent years in the direction of (b). An improved type of buffer has been designed. In this design buffer cases are made of steel castings or solid pressed steel. In addition to the usual buffering spring in the under frame, shock-absorbing high-capacity buffers are fixed between the plunger and head stock. The buffer face is flat instead of radius-ed for the greater part of its vertical axis to counteract tendency of the faces to slide upon impact. The buffer spindle has also been increased in diameter to resist bending. Experience has shown that real advantages have been derived from these improvements in more than one case of accident.

The Metropolitan District Railway continue their practice of providing the central buffer used on their stock with corrugations to prevent the tendency of vehicles to mount. The Pullman Car Company rely, in their British practice, upon their form of vestibule ; one end of the bellows portion being attached to a wide fixed solid steel plate, which provides a large surface for contact, and these face plates are extensible by means of two powerful steam springs. The Great Central Railway have gone further, and, in addition to the improved buffering arrangements, are fitting all their new passenger stock with shock-absorbing corrugated fenders.

It is for consideration whether the whole subject of the desirability of equipping passenger stock with devices to resist the tendency to over-ride and telescope should not now be again reviewed by the committee of railway experts, at present engaged upon standardising carriage and wagon stock.

VII.—Summary.

Recapitulation of the conclusions arrived at, and recommendations made, will possibly be of service.

1. The cause of this collision was the presentation to, and acceptance by, the enginemen of the down slow train of a tablet not applicable to the section Abermule-Newtown.

Irregular practice on the part of the traffic staff at Abermule in connection with the regulations for the custody and transference of tablets was the origin of the series of grave misunderstandings and assumptions between relief-stationmaster Lewis, signalman Jones, porter Rogers and clerk Thompson, which finally led up to the delivery to the enginemen of the wrong tablet by Lewis.

Responsibility for the growth of this irregular practice rests upon stationmaster Parry, who was away on leave at the time of the accident, and for some ten days previously, and to a less degree upon the traffic inspection staff for not detecting and checking the irregularity.

Of the traffic staff on duty at the time, responsibility, in my opinion, lies equally upon Lewis and Jones, and to a less extent upon Rogers and Thompson, both of whom are lads under 18 years of age. Responsibility, to an equal degree with Lewis and Jones, rests with driver George Jones and fireman Albert Evans, enginemen of the down slow train, who were killed in the collision, for their neglect to examine the tablet handed to them.

2. The case illustrates the importance of the traffic inspecting staff ensuring :—

(a) that absolute obedience be given to the regulations for single line working in respect of the custody and transference of single line tokens ;

(b) that there is a clear and definite understanding by all members of the traffic staff, especially at roadside stations, of their respective duties and responsibility ;

(c) that instruction in single line instrument working, which may otherwise give rise to slipshod and irregular methods of using the instruments, shall only be permitted under well-defined conditions and at authorised centres ; and

(d) that meal hours are arranged so that possible misunderstandings with regard to responsibility for working shall not arise.

It further illustrates the necessity for enginemen, both drivers and firemen, in the general interests of safety to regard the duty of examining single line tokens as one of primary importance.

3. I feel so strongly that due regard will in future be paid by all concerned to the rules and regulations for single line working, by which so high a degree of security has been obtained in the past upon British railways, that it is difficult to find justification for calling for the provision of additional precautions at all single line tablet or staff posts.

(i) I, therefore, confine myself to the recommendation that :—

(a) at stations on single lines of railway, which are passing places for trains as well as electric tablet or staff posts, and where it is not feasible to locate the single line instruments in the signal-box, electric interlocking should be provided between the single line tokens and the starting, or advance starting, signal giving access to the relative single line section, and

(b) in special circumstances, even where instruments are placed in signal-boxes, it will be advisable to provide similar interlocking.

(ii) The distance between the west end loop points at Abermule and the signal-box being 332 yards, it is now permissible to work those points direct from the signal-box. Simplification of working will result from doing away with the ground frame, and action in this direction by the Company is not only desirable, but necessary, to ensure that the lie of the South-west loop points is correct, when trains from Newtown are accepted.

(iii) I suggest that the question of the equipment of new passenger stock with devices to resist the tendency to over-ride, which causes serious loss of life and injury from telescoping in cases of accident, be reviewed by the committee of railway experts, who are now engaged in standardisation of rolling stock.

I have the honour to be, Sir,

Your obedient servant,

J. W. PRINGLE.

WILLIAM MORGAN, traffic controller, Moat Lane, states:—I was travelling in the van of the down 10.5 train on the day of the accident. This was the last vehicle but one of the train. The train was travelling in the usual way, and I do not think it had much time to get up speed before the collision took place. I cannot say whether the brake on the train was applied before the collision. The effect was to knock me sprawling, and it was five or seven minutes before I regained consciousness. When I got out I gave whatever assistance I could, and amongst others I spoke to the fireman of the up express. He was standing in the field at the time opposite where the collision took place. I saw he had two tablet holders in his hand, and asked him how he managed to get hold of the tablet for the down train. He said he did not know, but that he had managed to get it. I examined the tablet holders, and found them both in order. He was holding his own tablet holder for the up train, and I saw that it contained a tablet for the Newtown-Abermule section. I do not remember the number. I looked at the other tablet, which was for the Montgomery-Abermule section. I took the two tablet holders from the fireman, and I handed them eventually to Chief Inspector George when he appeared on the scene, and he then took charge of them. The Chief Inspector was travelling in a first class compartment of the down train, and after the collision he went back to Abermule Station to make necessary arrangements for doctors and assistance. It was on his return from Abermule Station that I handed him the tablet holders and tablets. I do not think the 10.5 train stopped at Abermule on this occasion more than two minutes. I know it is booked in the Working Time Book to stop from 11.57 to 12.5, but it does not make so long a stop unless it is intended that the express should pass it at Abermule. The train is permitted to leave any time after 11.57 if it is not to cross the express at Abermule. It was a fine morning to the best of my recollection, without rain. I saw the stationmaster coming back from the engine after, I suppose, he had given the tablet holder to the enginemen. I think the signalman must have been in the signal-box, as the signals were lowered. He has a control over the advance starting signal. The connecting loop points are worked from a ground stage. I did not see anyone take the tablet holder from the enginemen when we arrived at Abermule. I suppose it was taken from the six-foot way.

HENRY WARWICK, Superintendent of the Line, states:—The traffic staff at Abermule Station consists of a stationmaster, one clerk, two signalmen, and one porter. The permanent stationmaster is on holiday, commencing January 15th. The acting stationmaster, who took charge on the morning of January 15th, was reliefman Frank Lewis. Frank Lewis' duties as acting stationmaster are to take full charge of the station working. He is responsible for arranging the men's hours in order that the whole period for which the station is open is covered, so far as the signal-box and tablet working is concerned, by the two signalmen and himself. The station is open from 3.0 a.m. to 12 midnight. The hours are divided. On the early turn a signalman takes duty for nine hours (including one hour for breakfast) from 3 to 12. The second man takes duty from 2 o'clock to the close of traffic, with one meal hour. Between 12 and 2 the stationmaster is there without a signalman. The object of this arrangement is to prevent the necessity for the men working overtime. The regulations with regard to the tablet working are laid down on pages 12 and 13 of the Appendix to the Working Time Book. The only people authorised to use the tablet instruments and bells are those members of the staff who have been passed in the tablet working regulations and General Rules and Regulations by the District Inspector. These are the people who are "specially appointed" as referred to in the Regulations. The staff generally are fully aware of this fact. Reliefman Frank Lewis, signalman Thomas Jones, and signalman A. Fleming are the three people out of the traffic staff at the station who were "specially appointed," in accordance with what I have stated before, to use the bells and instruments. Lewis was examined in May, 1911, and passed as a signalman. He was re-examined in February, 1916, and passed as a reliefman. A reliefman is proficient in the duties of signalman and stationmaster. The signalman on the early turn is in charge of the station until the stationmaster comes on duty at 9.0 a.m. After 9.0 a.m. the stationmaster is in charge of the working of the tablet instruments. He can, however, if his duties necessitate it, delegate the working of any particular train, so far as tablet operation goes, to the signalman.

Unless specifically arranged with the signalman, the stationmaster cannot delegate the working. Between the hours of 12 and 2, when there is no signalman at the station, the stationmaster has to take charge of both tablet instrument working and signal-box working. During these hours there is no train scheduled to stop at Abermule, no train being scheduled to arrive at, depart from, or pass Abermule between 12.5 p.m. and 2.40 p.m. Between 2.0 p.m. and 8.0 p.m., when both the stationmaster and the signalman are on duty, the stationmaster can delegate to the signalman the duty of working the tablet instrument. Between 8.0 p.m. and 11.0 p.m. the signalman, in the absence of the stationmaster, again assumes full duties. The porter comes on duty at Abermule at 11.30 a.m. for nine hours' duty, with one hour off for meals. The only duty the porter has to perform in connection with the train working, i.e., signals or tablet, is in connection with the operation of the ground frame at the Newtown end of the yard. He is instructed by the stationmaster or signalman, as the case may be, when he has to attend to this from time to time. The ground frame is bolt-controlled from the signal-box. The ground frame contains seven levers, of which one is spare, and it is bolt-locked from the signal-box. The signal-box contains twenty-two levers, including four spare. One of the levers in use locks the level crossing gates, and another releases the ground frame at the Newtown end. It is the duty of the signalman to open and close the gates of the level crossing, which has to be done by hand. The signal-box adjoins the crossing. I think there can be no doubt that stationmasters clearly understand that they are not permitted to delegate the duty of tablet or bell working to anyone who has not qualified for tablet, etc., working, and who has not been passed as efficient by the District Inspector. I think it was District Inspector T. Pugh who examined Lewis first in 1911, and District Inspector George who examined him in 1916. Lewis' record is a good one. He entered the Company's service in June, 1897, as a porter, and there is nothing recorded against him for any sort of irregularity in connection with tablets or working of trains. The special attention of the staff was drawn, in September, 1915, to the necessity for the Regulation in connection with the custody and transference of tablets being observed, and to the importance of the working of the tablets being done by the same individual, and to the fact that no unauthorised person must be allowed to work the tablet instruments. Special slips were sent out with gummed edges, and instructions that the slips were to be pasted in the relative pages of the Appendix to the Working Time Book, dated June, 1911. The number of trains that pass through Abermule between 3.0 a.m. and 12 midnight is 23. I hand in a statement showing the hours at which these trains work. The maximum number in any one hour of up and down trains booked is three. This is between 4.0 p.m. and 5.0 p.m.

JOHN GEORGE, Chief Traffic Inspector, states:—I was travelling in the 10.5 a.m. down train on the day of the accident. I rode in the fourth carriage from the engine in a first class compartment. The morning was fine, no rain falling. I did not notice the tablet handed over by the driver to anyone at Abermule. I saw the stationmaster on the up platform passing my compartment towards the engine with a tablet holder. He was running. I do not think the down train could have attained a greater speed than from 15 to 20 miles an hour before the collision took place. The gradient is rising and he had six equal to nine on. I felt nothing, before the collision took place, which led me to suppose that the continuous brake had been applied. I think I should have noticed the application of the brake if it had been so applied before the collision. I was thrown forward violently, but was not knocked insensible as a result of the collision, and was out of the train before, I think, anyone else. I immediately ran forward to the engine, and seeing the terrific smash that had occurred, thought the best thing would be to get back to Abermule and immediately arrange to get doctors and assistance from Newtown, and so I went back at once. The first person I saw was the relief stationmaster. I asked him what had taken place, and he said, "The down train has taken the Montgomery-Abermule tablet." I then got into communication with the General Manager and the Superintendent's Office at Oswestry, and asked them to make arrangements to send breakdown train, and also wire to Llanidloes and Machynlleth to send breakdowns. Before I sent the messages to the General Manager I telephoned to Newtown to send assistance in the way of doctors and nurses. I reckon the actual collision took place at 12.5. I arrived at Abermule at 12.18, and I was informed that the first doctors arrived at the scene of the accident about or

before 12.40 p.m. I returned to the scene of the collision, after making these arrangements, on a bicycle. I arrived back about 12.45 or 12.50. This was after the doctor and assistance had arrived from Newtown. The first person I met on arriving at the scene was Morgan, the traffic controller. I saw he had two tablet holders in his possession. I asked him where he got the tablet holders from. He said that the fireman of the up train had given them to him. I looked at the tablets contained in the holders. I noticed that the number of the Montgomery-Abermule tablet was 18. I forgot the number of the Newtown-Abermule tablet. I have no doubt that these tablets were the ones carried by the trains concerned. The working of the tablet instruments lies between the stationmaster and the signalman, when they are both of them present on duty. The stationmaster being in charge of the station, the responsibility for defining at what time, and by whom, or for what trains, the tablet instruments are to be worked rests with him. I have been 30 years on the railway, and have been six years Traffic Inspector, and 15 months as Chief Traffic Inspector. It is my duty, and that of the Traffic Inspectors, to see that the Rules and Regulations for train signalling and the train tablet system are given proper effect to by the stationmasters and signalmen. I would have reported any instances, if I had come across any, or any had been reported to me, of unauthorised persons using the tablet instruments. But my attention has not been called to any such cases. I pass Abermule four times a week, or thereabouts, and should have observed any case in which an unauthorised person had taken a tablet from the engine-driver. I know acting stationmaster Lewis at Abermule, and regard him as a very reliable man, and I cannot understand how, on this occasion, he should have taken a tablet holder handed to him by someone else. Under the conditions which I understand prevailed, that is to say, the stationmaster was in the station, although the tablet had been authorised for issue by the signalman for the down train, it was the stationmaster's duty to take the tablet when the down train arrived, as the tablet instrument is in the booking office, and not in the signal-box. In the case of Abermule, it has been the practice for many years, in the case of down and up trains crossing there, for the stationmaster to take the tablet from the down train from the six-foot way from a point opposite where the station office is, and then to return to the platform to obtain a tablet for the up train between Abermule and Montgomery, and having got the tablet he shouts to the signalman in the cabin that it is all right for him to set the points for the up train. He returns the tablet he has obtained from the up train through the instrument, and obtains another for Newtown for the down train. In accordance with my watch the down train arrived at Abermule at 12 o'clock, and in accordance also with my time the train left at 12.1. It would be justifiable either for the stationmaster or signalman to decide that the scheduled crossing of two trains should be departed from in case of necessity. I can only imagine that the stationmaster, when he received the tablet holder from the clerk, thought that the signalman had decided to alter the crossing of the two trains, and, moreover, had obtained the right tablet for the down train himself from the tablet instrument. The only person authorised to enter times in the train-book for bell signals, etc., in connection with the train movements are the men authorised to deal with the tablet working. I have on more than one occasion heard the stationmaster at Abermule emphasise to the clerk that he was on no account to touch or interfere with the tablet instruments. I am also fully persuaded that the staff generally are clearly aware that only the men qualified after examination for block working are authorised either to receive a tablet from an engineer or to operate a tablet instrument. I should certainly have recognised the fact that the practice at Abermule of improperly working the tablets, etc., was existing, if it had been existing. I think this was an isolated case of irregularity. I think that the staff at Abermule Station is adequate to properly carry out their work, including that of tablet working, signalling, etc. Porter Rogers has been authorised by the stationmaster to issue a tablet under his instructions. He has to obtain the authority of the stationmaster before issuing. I am aware that this is the case. The object to be obtained is to train the men.

ELLIS EDWARD LLOYD, district traffic inspector, states:—My section is Aberystwyth to Devil's Bridge and Forden. I have been traffic inspector for the last twelve months. I know Lewis well. I am aware that, in addition to the stationmaster and the two signalmen, the porter sometimes works the tablet instrument under the direct authority of the stationmaster. I have seen him do it on about two occasions. I

have not objected to it for the reason that the stationmaster was actually in the instrument room with him, and it was done from the point of view of education. Of course, the man would have no authority to work the tablet instrument in the absence of the stationmaster, and if I found him doing it I should, of course, stop it.

JAMES BROCK states:—I am station foreman at Newtown, and on the morning of the 26th was in charge of the East signal-box at Newtown. I came on duty on this date at 11.30 a.m., and worked until 9.0 p.m. I had similar hours the day before. The up express was accepted by me from the South Box at 11.48; “entering section” was received 11.51, and I asked for “line clear” from Abermule at 11.56. The train was accepted and a tablet released at the same time, i.e., 11.56. The train arrived at Newtown at 11.57, and left the station 11.59. The next I heard was a telephone message from Abermule at 12.2 p.m. to ask if the express had left. I said, “Yes, it left at 11.59 when I put it in section.” I sent “entering section” for the train when it left the station at 11.59 for Abermule, but I got no acknowledgment for it. There was nothing unusual in the bell signals which were passed between myself and Abermule for the release of the tablet for this express. As far as I know, the procedure with regard to giving men instruction in regard to working the tablet instrument is that they would never be allowed to use tablet instruments in the absence of a properly qualified man. I was in charge of the tablet instrument at Newtown Station when it was first installed many years ago. It was then part of the telegraph office. It was moved into the signal-box about seven years ago. In that case also no one was allowed to use tablets unless qualified, except in the case where a man was under instruction with a view to qualifying himself; in which case, any operation he did was under the eye of a qualified signalman or the stationmaster. I believe it was relief stationmaster Lewis who spoke to me on the telephone at 12.2.

FRANCIS WILLIAM THOMPSON, clerk, states:—I am 15 years old. I joined the Company's service on June 16th, 1919, as junior clerk. My hours of duty at Abermule Station are from 9.30 a.m. to 8.30 p.m., with the following intervals for meals:—11 to 12 for dinner, and 3.0. to 3.30 for tea. I also get a half-day on Wednesday or Thursday. My duties mainly comprise issuing tickets and attending to the telegraph. I also collect tickets. I am not authorised to collect tablets from drivers, or to take them tablets. I have done it when there was no one else there to do it. On these occasions I have not been told to mind my own business. When the down train arrived at Abermule the stationmaster was in the coal wharf on the up side of the line. The stationmaster went for dinner about 11.15 or 11.20, and I do not remember whether he came back to the station buildings before going to the coal wharf. The porter, I think, was at the small box at the south end of the yard. The signalman was in the signal-box. It is the practice of the stationmaster to take the tablet from this down train. I have occasionally seen signalman Jones or signalman Fleming take it. On this particular occasion Jones was in the signal-box, and as the stationmaster was not there to take it I jumped off the up platform and took it from the driver in the six-foot way, as he passed. I may have taken it two or three times before at Abermule Station. After taking the tablet holder I got back on the up platform, and I met the relief stationmaster at the door-way coming into the booking office from the coal wharf. If I had not seen him I should have gone into the booking office with the tablet holder, taken the tablet out, and put it into the Montgomery instrument through the slide. I should have then asked the signalman what I was to do. As it was, I handed the tablet to the stationmaster and said to him, “Change this tablet, Frank, while I go and get the tickets.” I then went and crossed the line to the down side and collected the ticket from the only passenger who alighted. I did not see what the stationmaster did after I handed him the holder. I have, before now, got a tablet out of one of the instruments at Abermule under instructions from signalman Jones. On that occasion the signalman was on the platform. He did not come into the instrument room with me, and I got the tablet out and gave it to him. I cannot say how many times I have got a tablet under instructions of the signalman. It was certainly more than once. I am not aware that it was against the rules for me to do it when I got instruction. I have also got a tablet out for the stationmaster, though

not by his own request, when he was in the booking office. This was for Mr. Parry the stationmaster before Lewis' time. Mr. Parry showed me how to get tablets out I have seen porter Rogers get out tablets. I was not aware that we were not allowed to handle the instrument. I had been told by the stationmaster to be very careful how I do handle them, but I have not been specifically ordered not to handle them. Someone in authority has told me that on no account am I to touch the instrument. When I have done so it was because no one else was there to do it. I cannot remember who it was that told me.

Thompson was recalled with regard to his statement of tablet working, which he adhered to in Mr. Parry's presence.

WILLIAM THOMAS JONES, signalman, states:—I am 60 years old. I joined the Company's service about 32 years ago. I was a signal porter in 1894, and I have been at Abermule as signal porter or signalman ever since. The train-book at Abermule is kept in the tablet office. The person who uses the tablet instrument is supposed to enter the times in the book. In addition to the stationmaster, signalman Fleming, and myself, there are entries by the porter. I do not know who is properly authorised to use the tablet instruments, nor do I know who authorises them. There are three of us who use the tablet instrument, the stationmaster, the porter, and myself. I came on duty at 3.0 a.m. on Wednesday, the 26th. I ordinarily book off at 12 noon. I am booked off for breakfast from 8.20 to 9.20. The stationmaster does my work while I am away. The stationmaster goes to his dinner at 11.20 or thereabouts, and he is generally back by 11.50. I issued the tablet for the down train. I was asked for the tablet at 11.52. I was waiting in the tablet room to be asked, and released the tablet at 11.52. The last train I dealt with was an up goods, which left the station at 10.53. During the hour I was performing other duties in the goods station. Including this train I dealt with five up and four down trains after I came on duty. The train was put in section at 11.55. I then left the tablet room and went to the gates to close the gates against the road and to pull the home signal off. The express is due to pass Abermule at 12.5 p.m. The stationmaster, when I left the tablet room, was standing outside the entrance to the booking hall. I did not say anything to the stationmaster. I assumed that he heard the bell signal for the down train. I also relied upon him to take the bell signals, and issue the tablet for the up train if one was asked for. It is the practice of the stationmaster to take the tablet off the 10.5 down train as the train passes into the station. He stands in the six-foot way to do so. The down passenger arrived at the station at 12.2. There is an entry, I see, in the train-book that the express was accepted from Newtown at 11.56. It is in porter Rogers' handwriting. He should have told me when he accepted the train that it had been accepted. At the time I accepted the down train both porter Rogers and clerk Thompson were in the booking office. They were both in the booking office when I left. I do not know what position the points at the south end of the yard were in as the down train was approaching. After the down train arrived at 12.2, I replaced the down signal at danger, and I then went down on to the platform, when the clerk came to me and said, "Pull off the signals for the down train to go right away, because Lewis has taken the tablet up to the engineman." The down engineer then whistled, and I then pulled the starting signal off. The clerk came straight to me over the level crossing from the up platform, and told me that the down train was starting at once, before he went to collect the tickets from the passengers. About a minute later the engine whistled, and I saw the stationmaster on the down platform, and I supposed he must have handed the tablet to the engineman.

Signalman Jones, recalled: After I had received the "entering section" signal for the down train from Montgomery, I telephoned to Moat Lane, and heard that the express was just leaving. When I knew the express had left Moat Lane at the moment that the down train had left Montgomery, I expected that the trains would cross at Abermule.

HENRY SEYMOUR HUMPHREYS, signalman, states:—I have 34 years' service with the Company; 32 years as signalman. All the time as signalman at Montgomery Station. I came on duty at 7.0 a.m. on the 26th, to work until 3.0 p.m. The 10.5 down

train was offered by me to Abermule at 11.52. It was accepted by bell, and a tablet was released. It had arrived at 11.51. It left the station at 11.53. I know the driver of the train (George Jones) well. I did not speak to the driver on this occasion. I do not know his fireman. In Montgomery Station the tablet instruments are in the signal-box, and no one handles the instruments except the signalmen. I got "entering section" for the down train from Forden at 11.48. I did not get "out of section" for this train, which is generally given when the tablet is returned to the instrument at Abermule, until 1.8 p.m. The usual time that elapses before a tablet is returned at Abermule in the case of down trains, and "out of section" is given, is about seven or eight minutes. I should, therefore, have expected to receive "out of section" for it at 12.1 or thereabouts.

The down passenger train was held at Montgomery a minute longer than usual, owing to shunting being carried on by a previous up goods train, which was occupying the single line between Montgomery and Abermule.

ERNEST PERCY ROGERS, porter, states:—I am 17 years old. I joined the Company's service in September, 1917. I was first of all at Montgomery Station, and have been porter at Abermule Station for two years. I came on duty on the 26th January at 8.0 a.m., and was booked off at 6.0 p.m. I had similar hours the previous day. I have a meal period from 11 to 12. I and clerk Thompson have dinner together in the office generally about 11.15. My duties generally are to attend to the lamps and to passengers' luggage. I also issue and take tickets when the clerk has his half day off. I also do point-holder's work, and other goods work in the yard. Whilst the stationmaster, Mr. Parry, has been there I have, under his instructions, operated the tablet instrument. I have also, in the absence of the signalman and the stationmaster, issued a tablet when the bells rang. I have also obtained tablets from the instrument in their absence. I was not actually aware of the rule that no one but those who have been examined and have qualified for the position of porter-signalman, or signalman, are authorised to use the tablet instrument. I do not remember that I have actually had the stationmaster's instructions or the signalman's instructions in their absence to issue, or obtain tablets for trains. The stationmaster, however, was quite aware that I have done it in his absence, and, I believe, trusted me to do it. I have picked up the operation entirely from seeing other people do it. As far as I can remember, on the 26th Thompson and myself commenced to get our dinner in the office about 11.15. We began to have our dinner in the booking office about 11.15. As far as I can remember, signalman Jones was in the tablet office whilst we were having our dinner. I cannot say that I remember hearing signalman Jones give a tablet to Montgomery, but he told me that the down train had left Montgomery. He told me when he left the booking office that the train had left Montgomery three or four minutes. I did not book the entries in the train-book for this down train. It must have been the signalman. When the signalman left the booking office I and Thompson were in the booking office by ourselves. After the signalman left, the bell from Newtown rang four bells, asking for "line clear." That is to say, asking for a tablet for express. This was at 11.56. So I went into the tablet room, repeated the bells, and held the plunger in on the last stroke, and so released a tablet. I entered the time in the train-book—11.56. The signalman, before leaving the booking hall, had called up Moat Lane to ask where the express was, and he told me, at the same time when he said that the down train had left Montgomery three or four minutes, that the express had just left Moat Lane. After entering the time for the acceptance of the express in the train-book, I immediately left the booking office, and went to the ground cabin at the south end of the yard to make the up road for the express. The points at that time were lying for the down road. I suppose it would take me about three minutes getting there. It is my usual practice, after giving a tablet for the express, to go down to the south end ground frame and to set the points for the express, and after that has passed, to set the points for the down train to leave the station. I suppose I arrived at the ground frame about 11.59, or perhaps 12 o'clock. When I tried to set the points for the up line, I found the points were locked for the down road, and I could not move them. I did not book the time of arrival of the down train in the station, but I remember, when I found it was not possible to set the road for the up line, wondering what I should do. I thought the rod working the points might be

broken. I hesitated for a little, and then went out on to the up line opposite the ground frame, and looked towards the station, and saw that the down train was standing at the platform. It must have arrived, I think, just as I got to the cabin. I was going to shout to them to release the lever working the mid-way bolt, but then I saw the stationmaster standing in the six-foot just opposite the engine of the down train, and saw him waving his arm to give "right away" to the train. I then heard the engine whistle sounding. The driver, I noticed, was on the ground oiling round his engine. So then I went back into the ground frame and pulled off the control on the advance starting signal, which I had reversed when I first arrived at the cabin. I thought something perhaps had gone wrong with the express at Newtown which necessitated the crossing of the two trains at Newtown instead of Abermule and that this accounted for the stationmaster giving "right away" for the down train. Seeing him give "right away" I assumed it was all right. The reason I did not tell anyone I had issued a tablet for the express was that I thought the signalman would after the arrival of the down train, come over to the tablet instrument office for the purpose of issuing a tablet for the express to go to Montgomery. When I left the office the clerk Thompson was also there, and he has, on other occasions, entered the bell signals in the book, if neither the stationmaster nor the signalman were in the office and if he had been in the office when the "entering section" signal was received, I think he would have entered the "entering section" signal in the book. I do not remember having been forbidden to use the tablet instrument by the stationmaster Mr. Parry. I accepted the express in the same way on the 18th January. The figures 12.2 in the train-book for the arrival of the down train are those of the clerk Thompson.

JOHN PARRY, stationmaster, Abermule, states:—I have been nearly four years at Abermule Station. I went away for a fortnight's holiday on the 15th January, and returned under instruction on the 27th. Porter Rogers has with my consent, and in my presence, used the tablet instrument on occasions. He understands the working perfectly well. The understanding has been that he is not to touch the tablet instrument unless I or the signalman are present. He has had definite instructions that if the bell rings when neither I nor the signalman is present, to come and fetch one of us. It is not the same case with Thompson. He has not had authority to touch the tablet instruments on any occasion. So far as taking tablets from and giving tablets to enginemen is concerned, the arrangement I have had has been that in the case of the two trains concerned when they cross at Abermule, I take the tablet from the driver of the down train as I stand in the six-foot, and await the arrival of the express to take its tablet. I also hand the tablet to the express on these occasions. The tablet for the down train I sometimes take myself. Other times I send the clerk with it, with instructions to hand it to the engineman. In the case of these crossing trains, the down train is usually accepted by the signalman. He may, also, accept the express if the bells are received before he leaves the tablet room to go over to the signal-box to work the signals for the down train. If he has gone to the signal-box before the bells for the express are received, I operate the tablet instrument for the express. In the case of taking tablets for the two trains when they cross at the station, I always do it myself. The decision as to whether the ordinary crossing arrangements are altered for these two trains rests either with the signalman, if he is in the tablet room at the time, or with myself. I am always in the booking office at this time, and if on any rare occasion I should happen to be out and the bells in connection with the express ring, it is the duty of the porter or the clerk to fetch either myself or the signalman. My reason for allowing the porter, who is not a "duly authorised person," to use the tablet instrument when I am there, is for the purpose of giving him instruction. I thought this was desirable in the general interests, and, as long as it was done in my actual presence and under my supervision, I thought it was in line with the instructions for train signalling on single line. The signalman's duties also include some luggage work and parcels work, in which he assists the porter. It is the practice when I am at the station for either the stationmaster or signalman, whoever takes the tablet out of the instrument, to give it to the engineman to proceed. The procedure, if I had been at the station on this particular morning, would have been for the signalman, in the absence of the stationmaster, to take the tablet from the down train, and then probably he would have put the down home signal at danger. He would then have to come into the tablet room to clear the instrument by

replacing the tablet. In the circumstances, as I understand it, when the four bells were received for the express from Newtown, the signalman, not being present, and the stationmaster being away from the office, the porter should immediately have gone to the signalman and told him that the express was being offered. I certainly have never authorised the porter to accept or release a tablet under such conditions. It is the duty of the man who hands the tablet to the engineemen, and also the duty of the enginemen themselves, to see that the tablet concerned is correctly marked for the section over which the train is to travel. The arrangement at Abermule, where the tablet instrument is on one side of the line in the booking office and the signal-box on the other, has been in existence for many years without any ill result. It, of course, means the presence of both signalman and stationmaster whenever the trains are booked, and involves sometimes delay in working trains. But so far as I have seen, if properly carried out it ought not to involve any danger. Special instructions have been issued to all stationmasters between Aberystwyth and Whitchurch to be present when the 10.25 a.m. up express passes, and to be personally responsible for the working. In view of the instructions regarding stationmasters giving personal attention to the working of this express, I should say it rested completely with the stationmaster if there was any question of altering the passing place from Abermule to Newtown. There are but few occasions on which the crossing has had to be altered.

FRANK LEWIS, guard performing reliefman's duties, states:—I have 24 years' service with the Company, and was a signal-porter since 1911; a reliefman doing stationmaster's or signalman's duties from February, 1916, and now employed as guard, signal-porter, or assistant stationmaster to meet emergencies. I took over temporary charge of stationmaster's duties at Abermule on the 15th January, in place of stationmaster Parry, who was proceeding on leave. My hours of duty at Abermule were from 9 or 9.30 a.m. until 8.30 p.m., or such time as the mail train has passed. I have been three or four times acting stationmaster at Abermule in similar circumstances. I have also acted at Abermule as signalman and as guard. I am therefore thoroughly conversant with the duties of the whole of the staff at Abermule Station. The arrangements in connection with the tablet working, and the general duties of the staff of the station, are those which existed under Mr. Parry's authority. I have not altered any of them. I generally go away for my dinner at 11.15 to 11.20 and return about 11.45. On this particular day, the 26th January, I was rather later and did not go until 11.35. I was back from dinner about 11.55. I know that the stationmasters have had their particular attention called to the working of this express, and that it lies with them particularly to deal with it. The express and the down train cross at Abermule. It is rare that they do not. It has been my practice always to take the tablet from the down train when it arrives. I take it from the six-foot and go into the tablet room and return the tablet to the instrument. On the departure of the down train from Montgomery, an enquiry would have been made either by myself, Rogers, or the signalman as to the whereabouts of the express. In my absence it would fall to the signalman to take the tablet from the down train. If a message was received that the express was passing Moat Lane just as the down train had left Montgomery, we should know that the crossing of the train would be at Abermule, and the next thing to do would be to wait to issue a tablet for the express at Newtown. The only thing to prevent a crossing would be the break-down of the train between Moat Lane and Newtown or at Newtown. After returning from dinner at 11.55 I went into the booking office and found the signal-porter and clerk there. Sub-inspector Thomas was also there. He wanted a wagon for loading stakes. I went out with him into the yard to see after this. The porter and the clerk must have seen me go. I agree that if the signalman had got the bell signal for the down train, and received the information for the up express, he had to go across the road to the signal-box and pull off the signal for the down train. I fully expected to be back from the goods yard in time to take the tablet from the down train, and to attend to the working of the express. I did not know at the time I left that a tablet had been issued for the down train. I know the down train is booked to arrive at 11.57, and did not realise that if she was running on time a tablet must have been issued for her, and I was not told that a tablet had been issued by Jones. I was out opposite the coal yard looking after the business of the wagon for pitprops, and my attention was called by the noise

of the down train arriving. So I ran into the booking office. In the booking hall met Thompson, the clerk. He handed me a tablet holder. He said, "Take this tablet for the down train ; he is going on." I assumed he was going to collect ticket, and this might account for the fact of his not taking the tablet himself. I assumed he had changed the tablet himself under instructions from the signalman. It is common practice at Abermule, even in Mr. Parry's time, for the clerk to change the tablets. That was why I assumed he had done it on this occasion. I cannot say that this practice existed with regard to these two particular trains, but merely that he often does change tablets. I have not done more than to caution the boy to be careful how he used the tablet instrument. I have not stopped the practice of his using the tablet instrument, because it was an arrangement existing in the permanent stationmaster's time. When the clerk handed me the tablet holder I asked him, "Where is the express ?" and he replied, "About Moat Lane." I assumed that it was late, and knowing that the margin for the down train to get to Newtown and pass at Newtown must be small, I did not hesitate, but thought it was necessary to get the down train away as soon as possible. So I told the clerk to go to the signal-box and tell the signalman to pull off for the down train. I saw that the porter was down at the south end ground frame, and assumed that he was there to pull the points over for the down train. These points lie normally for the up road. So I ran along the up platform down the end across the road and handed the tablet to the fireman. The engine-driver at the time was on the ground oiling his engine. I most sincerely regret I did not look at the tablet. It is the engineer's duty also to look at the tablet. If, as I understand, porter Rogers at 11.56, on receipt of the four bell signal from Newtown, issued a tablet, he should at least have told either me or the signalman that he had done so. I know on other occasions that he has issued tablets in the same way. The serious mistake he made was not telling us. The urgency in the case of Sub-Inspector Thomas and his wagon, was that he wanted to catch the down train, and that was why I tried to arrange about it while he was there. My reason for not myself enquiring as to the whereabouts of the express was that I knew Jones was there, and assumed he would get the information and act upon it. I admit that the responsibility for the station working was mine.

GEORGE CHAMPION McDONALD, Chief Engineer and Locomotive Superintendent, Cambrian Railways, states :—I arrived at the scene of the collision about 2.30 p.m. on the day of the accident. The position of the vehicles that I found on arrival was as follows :—

Up train.—The motion of the engine was standing vertically over the rails. The boiler was thrown on one side, on the right-hand side of the line facing Montgomery. Next to the engine was the frame of the North-Western six-wheeled van, which had been thrown off the road on the left-hand side. On the top of this frame was resting the frame and body of a Cambrian bogie coach, which had swept the body of the North-Western van into the wreckage of the engine. This Cambrian bogie coach had come to rest at right angles to the line, and, except that it had lost its bogie, had suffered little damage. The next two coaches were a Cambrian bogie coach and a Great Western bogie coach. These two had telescoped into one another. The Cambrian frame and body had passed almost completely through the Great Western coach, and had swept nearly the whole of the inside of the latter and the passengers into a heap of wreckage at one end. It was from this end of the Great Western coach that the great bulk of the killed were taken. Following this was a North-Western brake-van. The end of this had been broken in, but the leading end was standing on the rails and not otherwise damaged. The last two coaches of the train, both of which were North-Western bogies, remained on the rails and were practically uninjured.

Down train.—The engine of the down train had reared straight on end, including the boiler. The tender was thrown on to the right-hand side of the road looking towards Montgomery, and more or less completely wrecked. The Cambrian bogie coach which followed was thrown off on to the same side as the tender and absolutely destroyed. The roof only remained intact on the bank. Following this was a North-Western bogie coach. The leading two compartments of this were wrecked, and the bogie was knocked back under the coach. The rear bogie was still on the road, and

except for this damage the coach was intact. The remaining four coaches of the train all remained on the rails, and were uninjured except for slight damage to the buffers.

I believe sixteen deaths have resulted. One was in hospital. There have also been sixteen injured. The bulk of them were in the up train (Great Western coach). I believe there were no serious injuries amongst the passengers who were in the last four coaches of the down train or in the last three coaches of the up express train. On the list that I have handed in, showing the rolling stock of the trains, the details are given of the tools and equipment carried on the brake-vans. I examined the debris and the stock of the two trains concerned, and found no indication that fire had arisen either in the broken up coaches or elsewhere, except in the case of the fire-box contents of the down train, which had been thrown out and were smouldering. None of the wood-work of the carriages caught fire, and there were no signs of gas jets having burned or explosions caused from gas escaping from the cylinders in the gas-lit coaches. The under-frames of the whole of the stock, with the exception of North-Western compo. No. 260, were of steel. The frame of this latter coach was composite. Both trains were fitted with the vacuum automatic brake operated from the cab of the engine and from each of the brake-vans, and working blocks upon the coupled wheels and tender wheels of the engines and upon all the wheels of the coaching stock. The vacuum worked to is twenty inches. The body-work of all the coaches was of timber. I have carefully examined the ground, and have come to the conclusion that they could not have seen each other at a greater distance than 300 yards apart. From my examination of the wreckage I have formed the opinion that both trains were running at, approximately, the same speed when the collision occurred. I imagine that the probable speed of the express when she sighted the other train was fifty miles an hour, and I understand the brakes were fully applied, after which the driver jumped off the train, in which case the speed would be considerably reduced before the collision took place. Roughly, my opinion is that the speed of each train at the moment of collision might have been thirty miles an hour. It may be of interest to remark that in nearly all cases the steel frames of the passenger coaches are not greatly damaged, with the exception of the Cambrian vehicle (No. 233), which was completely destroyed. The collision took place at a point one mile on the Newtown side of Abermule, measured from the signal-box. The actual spot is, approximately, on a tangent to a curve of fifty chains radius. This curve lies in a cutting, the slopes of which on the south side vary from sixteen feet to about three feet at the point of the accident, and on the north side from five or six feet to ground level at the point of collision. The total over-all length of the two trains combined was two hundred and fifty-two yards. After the collision the distance from the tail of one to the tail of the other was one hundred and eighty yards. The cross slope of the ground through which the cutting is carried is about one in five. I hand in drawings showing:—

The general alignment of the railway between Abermule and Newtown.

Cross sections of the ground through the cutting in which the accident occurred.

Signal diagram of Abermule Station.

Large scale station yard plan of Abermule.

Diagram of the two engines concerned, and

A large scale plan of Abermule station buildings.

EVIDENCE OF PERMANENT-WAY SUB-INSPECTOR THOMAS, TAKEN AT THE INQUEST ON THE 2ND FEBRUARY.

I arrived at Abermule at 10.17. My district extends from Llanymynech to Llanbrynmair Station. I came to arrange with the ganger of this particular length to send some stakewood to Caersws. I went to the ganger first after arriving at Abermule. I found him half-a-mile on the down side of Abermule Station. I arranged with him about this stakewood. He was going to bring it into Abermule. He was to bring it into Abermule on a trolley on Thursday and load it up. I then walked back to Abermule. I got back to Abermule Station about 11.30 and then went to try and find the stationmaster. I saw the stationmaster and Jones unloading sheets from a wagon. I spoke first to the stationmaster when I first arrived at Abermule. When I came back again after seeing the ganger, I saw the stationmaster and signalman unloading sheets in the yard. At 11.55 I then met the stationmaster

in the booking office. I went to the booking office to wait for him. The stationmaster arrived at 11.55—I looked at the clock. I asked the stationmaster if I could have a wagon for Thursday. It was important that I should know while there so that I could arrange for the men to do the work on Thursday. I went out into the goods yard with the stationmaster to see about the wagon between 11.55 and 12 o'clock. We went out almost at once—say two minutes afterwards. He jumped on the wagon to see if it was empty. He went back in a hurry. He said, "The train is coming, I must go." I also wanted to go on myself by the down train to Carno. I did not see the clerk whilst I got into the train. I did not see the stationmaster, clerk or signalman again before leaving. I did not notice any brakes put on before the collision. I noticed nothing whatever.

EVIDENCE TAKEN ON THE 17TH MARCH.

JOHN PRITCHARD JONES, driver, states:—I have about 29 years' service with the Company, and have been a passed driver for about 14 years. I came on duty at 9.25 a.m. on the 26th January, and would have booked off at 6.45 p.m. I was driving the 10.25 up express that morning and my fireman was John Owen. My engine was No. 95 of the 4-4-0 type, fitted with the vacuum brake. We work to 21 to 22 inches of vacuum. The brake was in good order. We stopped at Newtown, arriving about on time. Fireman Owen received the tablet from foreman Brook. I make it a practice always to look at the tablet after it has been handed to the fireman. It has always been my practice as a fireman and driver to examine the tablet, and as a driver I have always insisted upon the fireman, before putting the tablet holder on the hook, putting it down for me to look at before it is eventually placed on the hook. I have never known in my experience that a driver has failed to recognise the responsibility laid upon him for examining the tablet himself. We travelled in the usual way towards Abermule and had attained a speed of between 40 and 45 miles an hour—certainly not more than 45 miles an hour. We were passing under the bridge, and the first that I saw was the smoke of the approaching down train. I had my right hand on the brake at the time. I then saw the front of the engine too, and applied the brake to the fullest extent. I think the speed of the train was reduced to about 20 or perhaps 25 miles an hour. I stayed on the footplate until we were about three engine lengths apart and then jumped off. We shut off steam in the usual way about three-quarters of a mile before the overbridge is reached. I should think, on the curve in question, I could see an approaching train at a distance of 300 to 350 yards. I think there was steam applied on the local train when I jumped off the footplate, and it is unlikely, therefore, that he had his brake applied. I understand that my fireman says I whistled, and that other passengers in the train said they heard the whistle go, but I cannot remember whether I did whistle or not. I remember very clearly applying the brake. After the collision I was calling for the fireman, and he came to me, and I then asked him about the tablet. He brought the two tablets for me to see. He said to me, after showing me the tablets, "We are all right, John, it is they who have taken on the Montgomery-Abermule tablet."

EDWIN CHETWOOD, passenger guard, states:—I have 43 years' service with the Company and have been a passenger guard over 30 years. I came on duty on the 26th January at 10.30 a.m. and would ordinarily book off at 6.30 p.m. I was guard of the 10.5 down slow train on this date. I rode in the last but one vehicle. The train was a few minutes late that morning after leaving Oswestry at each of the stations. I knew the driver and fireman of the train well. They were in their usual health. According to my time we arrived at Abermule at 12.2—that would be five minutes late. I put my watch right when I started at Oswestry. I took charge of the train at Oswestry. On arrival at Abermule I got out on the platform and put out the parcels. I did not see any of the traffic staff at the station except clerk Thompson. He was on the down platform by my van. The lad took the letters and a parcel of papers I gave to him. I booked the time for leaving the station at 12.4. I did not look at the position of the signals until after I had got some of the stuff out of the van. When

I did look at them, both the starter and advance starter were "off." I tested the continuous brake when I left Oswestry. I am quite satisfied that the brake was in good condition, and the brake was probably reading 20 inches when we left Abermule. I am quite certain that the continuous brake was not applied on the train before the collision took place. I was standing up when the collision took place, and was pitched right forward from one end of the van to the other, and some of the boxes fell on my head. If I had been sitting down I should not have been so severely injured. I was so knocked about that I have no memory of what happened for three days afterwards.

JOHN OWEN, fireman, states:—I have 25 years' service with the Company. I have been firing for 17 years and a passed driver for two years. I came on duty on the 26th January at 9.25 a.m. and would ordinarily have booked off at 6.50 p.m. I was firing with driver John Pritchard Jones. In my experience it is the fireman's duty to hand over and receive tablets. On receipt of a tablet I always examine it myself and hand it to the driver to examine before placing it on the hook. All the drivers that I have fired with have made it a habit of examining the tablets. I received the tablet from foreman Brock at Newtown, and examined the names on the tablet. I do not think there is any advantage in having the tablets distinctively coloured. I prefer seeing the names of the tablet posts myself. I do not think even if tokens for single line sections were alternative, such as tablet and staff, that this would relieve enginemen of the necessity for examining the names on the tokens. So far as my own opinion goes, the great thing is the names on the tokens.

The usual place for closing the regulator is somewhere in the vicinity of the level crossing, something like three-quarters of a mile from the bridge over the railway. I understand the name of the crossing is "Cilgwrgan." My driver shut off steam at this point in the usual way. I think that the speed generally attained at this point is as much as 50 miles an hour. The driver saw the down train before I did. The first thing that I noticed about it was that the driver jammed the brakes on and opened the whistle. I ride on the left-hand side of the footplate and the driver on the right. My view from the left, although it was on the outside of the curve, was obstructed by the boiler of the engine. I put my head out of the cab on my own side and saw the front of the engine of the down train. Then I turned round and saw that my mate had got hold of the handrail and was getting on the step, so I followed his example on my side of the footplate. I waited on the footstep for a moment or two to see if there was any chance of any such check upon the movement of the two trains as to render a collision unlikely, but seeing this was impossible I jumped. The continuous brake was acting well upon my own train. When I was on the step I did not notice steam from the engine of the down train, but saw that it was steaming when I first looked out. There may have been an engine or two lengths between us when I jumped. I noticed after I got up from the ground that the second coach was between me and the engine lying across the road. I thought the speed of our train when we jumped was 30 or more miles an hour. Almost as soon as I got up I saw my driver was standing on the opposite side of the road just in the rear of and underneath the Great Western coach, which was leaning over towards the cutting. I got across the framing to where he was and he asked me whether I had got the tablet. I assured him that I had, and whilst he was getting first aid he again asked me about it, and I again crept under the frame of the Great Western vehicle, and found, after a little search, the two tablet holders lying on the left of the road alongside the wreckage of the two engines. So I picked them up and went back to the driver to show them to him and ease his anxiety. I found that one of the tablets was for the Montgomery-Abermule section, and this had evidently been carried by the slow train. I handed the two tablets to controller Morgan under instructions from chief inspector George.

APPENDIX I.

REGULATIONS FOR TRAIN SIGNALLING ON SINGLE LINES OF RAILWAY WORKED ON THE ELECTRIC TRAIN TABLET SYSTEM.

Object of Electric Train Tablet.

(a) The object of the system of Electric Train Tablet Signalling is to prevent more than one train being between any two Tablet Stations at the same time, and, when no train is in the Section between two Tablet Stations, to admit of a train being started from either end. This is accomplished by every train carrying a Tablet, one Tablet only being obtainable from the Tablet Instruments of the same Section at the same time.

(b) The Signalling of trains on the Electric Train Tablet System does not in any way dispense with the use of Fixed, Hand, or Detonating Signals, whenever and wherever such Signals may be requisite to protect obstructions on the Line.

(c) The system under which Electric Train Tablet Instruments are to be worked, and the mode of indicating descriptions of approaching trains, are laid down in the following Code of Regulations :—

Engine-drivers not to start without Tablet and proper Signals being exhibited.

(a) Except as provided in Rules 14A, 14B and 23, an Engine-driver will render himself liable to dismissal if he leaves a Tablet Station without the Tablet for that Section of the Line over which he is about to run, or unless it has been shown to him as required by the following paragraph, and by Rule 6.

(b) When a train has more than one engine in front, or when two or more light engines are coupled together, the Tablet must be shown to each Engine-driver, and delivered to, and carried by, the Driver of the last engine.

(c) After receiving the Tablet, the Engine-driver must not proceed until all the necessary Fixed or other Signals have been exhibited. He must keep the Tablet under his own charge (except as explained in Rules 14, 14A and 28) until he reaches the end of the Section, when he must give it up to the Signalman or other duly authorised person.

(d) Engine-drivers must be extremely careful not to take the Tablet beyond the Station at which it ought to be left.

(e) The person in charge of the Tablet Working will render himself liable to severe punishment should he contribute to any irregularity in the Tablet Working.

(f) Each Tablet has engraved or marked on it the name of the Tablet Station at each end of the Section to which it applies, and the Tablets of adjoining Sections are different in shape.

Custody and Transference of Tablet.

(a) Except as provided in Rule 30, the Signalman or other person in charge of the Tablet Working for the time being is the sole person authorised to take a Tablet from, or place it in, the Instrument.

(b) Except where some other person is specially appointed to the duty, the Station Master or Signalman is the sole person authorised to receive a Tablet from, and deliver it to, the Engine-driver, who while it is in his charge, must carry it on the bracket or other place provided for the purpose. Under no circumstances, except as provided in Rules 14, 14A and 19, must a Tablet be transferred from one train to another without being passed through the Instrument and dealt with in accordance with these Regulations.

NOTE.—When necessary, in the case of non-stopping trains, two competent men may be employed, one to receive and the other to deliver the Tablet.

Normal Position of Fixed Signals.

(a) The DANGER Signal must always be kept exhibited at all the Fixed Signals at Tablet Stations except when it is necessary to lower or turn them off for a train to pass; and before any Signal is lowered or turned off, care must be taken to ascertain that the Line on which the train is about to run is clear, and that these and other Regulations have been duly complied with.

Working of Fixed Signals.

(a) When trains which have to cross each other are approaching a Tablet Station in opposite directions, the Signals in both directions must be kept at DANGER, and when the train, which has to be first admitted into the Station, has been brought to a stand or the points have been set for a Siding giving a clear road of 200 yards beyond the Starting Signal, the Home Signal applicable to such train may be lowered to allow it to draw forward to the Station or to the Starting Signal, and after it has again come to a stand, and the Signalman has seen that the Line on which the other train will arrive is quite clear, the necessary Signals for that train may also be lowered.

(b) Where Starting Signals or Advanced Starting Signals are provided, except in the cases referred to in Rules 14, 14A, 14B, and 23, the Starting Signal or the Advanced Starting Signal must not be lowered until a Tablet has been obtained for the train to proceed to the Tablet Station in advance.

Normal Position of Indicators.

(a) When the Tablet Instruments are not in use, the word "In" is shown on the white ground of both Indicators.

(b) When the Indicators are in their normal position the Line must be considered blocked.

Use of Instruments and Bells.

(a) These must be used exclusively for the purposes shown in these Regulations, and only by the Signalman or other person specially appointed for the duty.

(b) The movements on the Instruments and Bells must be made slowly and distinctly, and the pauses between the sets of beats clearly marked, the plungers being pushed well home.

APPENDIX II.

CAMBRIAN RAILWAYS WORKING TIME BOOK.

Booked Timings for the two Trains concerned.

Mileage.	Station.		Times.	Average Speed.
<i>Down Train—</i>				
6 miles, 17 chains...	Welshpool	...	Depart 11.35 a.m.	29 miles an hour.
	Montgomery	...	Arrive 11.48 a.m.	
3 " 49 "	" Abermule	...	Depart 11.49 a.m.	27 miles an hour.
3 " 72 "	Newtown	...	Arrive 11.57 a.m.	
	"	...	Depart 12.5 p.m.	29 miles an hour.
		...	Arrive 12.13 p.m.	
		...	Depart 12.15 p.m.	
<i>Up Train—</i>				
27 miles 29 chains...	Machynlleth	...	Depart 11.10 a.m.	35 miles an hour.
	Moat Lane Junction	...	(1 a.s) 11.50 a.m.	
13 " 58 "	Newtown	...	Arrive 11.57 a.m.	34.3 miles an hour.
	" Abermule	...	Depart 11.58 a.m.	
	Welshpool	...	(pass) 12.5 p.m.	
		...	Arrive 12.22 p.m.	