

CONFIDENTIAL INFORMATION FOR EXECUTIVES

THE AUTOMATICKET
BELL PUNCH SYSTEM
OF FARE COLLECTION
♦ AND CONTROL ♦

BELL PUNCH COMPANY
LONDON

PRIVATE AND CONFIDENTIAL

THE
AUTOMATICKET BELL PUNCH
SYSTEM

of Fare Collection and Control

is presented in the following pages from the point of Managerial Control. It is respectfully suggested that very serious study and consideration be given to it by Principles and Executives of Traffic Operating Organisations, who will appreciate the value and significance of its features, epitomized at the end of this booklet.

BELL PUNCH COMPANY LTD.
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The AUTOMATICKET BELL PUNCH SYSTEM of FARE COLLECTION and CONTROL

Foreword

The chief anxiety of any Management in connection with any Fare Collection System must centre upon :—

- a. Speed of collection of fares.
- b. Accuracy and efficiency of Control.
- c. Comprehensiveness of information obtainable.
- d. Internal Office Economy.

With the Automaticket Bell Punch System the three last are capable of absolute and ready proof, the basis of which is set out in the following pages.

The speed at which fares can be collected, however, is a matter upon which it is necessary for this Company to issue an assurance to the General Managers of Traffic Organisations that an amazing alacrity is *certain*.

Before putting forward this System of Fare Control, very careful tests have been made by the Company under proper conditions, and it is a definite fact that, after practice extending over only a few days, conductors can issue a great variety of tickets at a rate equal to that possible with the ordinary fare collection system of to-day.

When thorough familiarity has been gained, which may require anything from one week to three weeks in the case of conductors



CONDUCTOR EQUIPPED WITH
AUTOMATICKET BELL PUNCH

operating a system as complicated as that of the London Metropolis, the speed of cash collection is greater than by any other known system.

This, however, is not true where the tickets issued mainly consist of only one or two denominations. That is to say, in a vehicle requiring the *sudden* issue of 40 or 50 all of one or two denominations and all covering a very short journey (such as might occur at a theatre or a factory entrance), the speed of issue would be reduced. With the knowledge of this, special arrangements are very easily made to enable the maximum known speed to result even in this contingency.

The layout of the printed matter on the ticket can help greatly to attain this, and it is hoped that General Managers will consult the Company on this feature should the necessity arise.

Meanwhile, it is seriously suggested as being very practical, in view of other manifest economies and safety factors, to add a supplementary conductor for rush hours or on congested routes on the larger vehicles, such as double-decker trams.

Where queues of passengers are awaiting transportation, valid tickets can be issued to them from an Automatic Bell Punch by a pavement conductor. The system allows of this without the least possibility of clashes between the two conductors.

A BRIEF EXPOSITION OF THE AUTOMATIC
BELL PUNCH SYSTEM OF FARE COLLECTION
AND CONTROL.

For the convenience of Executives, the Automatic Bell Punch System of Fare Collection, and the mechanical and clerical features of which this System is composed, are briefly set out at the commencement of this handbook in order that Executives can, without reference to any other publication on this subject, immediately and completely apprehend the Notes on Management which follow.

The System is based on a ticket with a duplicate. Both are incomplete and have no significance or value until completed by the Conductor who fills in, in writing, the amount of the fare paid. If no further particulars are to be entered by him on the ticket, completion is a momentary act.

The duplicate provides the record, for office purposes, of the transaction.

The tickets and their duplicates are contained in the casework of the Punch. The duplicates are NEVER accessible to the Conductor, except, of course, he break into the Punch; the tickets themselves are accessible only AFTER completion and issue.

If a ticket is completed or altered by ANYONE after issue from the Punch, this can be detected IMMEDIATELY. This is because a ticket properly completed in the Punch bears on its back a mirror-image of the writing on the front. These two writings, on a properly produced ticket, correspond.

This mirror-image on the back has peculiarities which cannot be reproduced when the ticket has once left the Punch.

This ticket system is *the only one in the world which provides direct and incontrovertible evidence of any fraud*. The punishment inflicted by the law for any such fraud can be very heavy.

The tickets and duplicates are printed on continuous strips, each ticket and its corresponding duplicate bearing the same serial number.

Any ticket and its duplicate can thus be associated for comparison of the written particulars.



THE AUTOMATICKET BELL PUNCH

A Ticket is ready for removal

The Ticket perforating device will be noticed on the side of the Punch

All the tickets of a Traffic Enterprise can be identical, whereby all complexity of ticket stocks is removed. They are of unlimited availability and can be filled in by Conductors with any required fare values.

On the tickets can be written, at the command of the Management, any information which it wishes to receive from Conductors or Inspectors. This information will be recorded on the duplicates, from which it will be extracted by the Checking Office.

The duplicates can be VERY SPEEDILY and completely analysed, and all necessary information for audit and record purposes obtained therefrom. For this analysis a mechanism and a form, called the Analyser and the Daily Route Summary, are available, which make analysis almost completely mechanical.

The accuracy of the fare collection and the analysed records can be substantiated at any time.

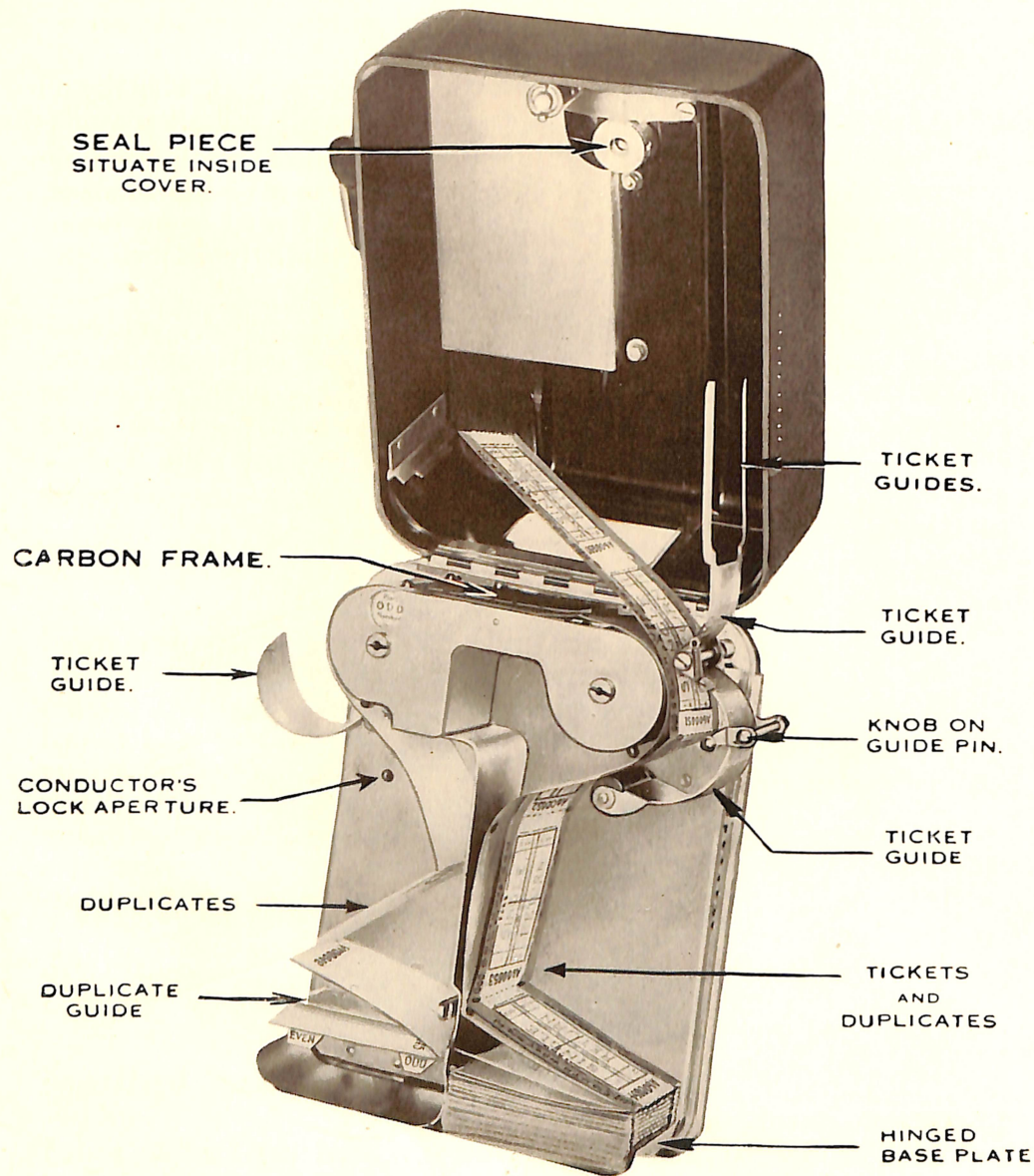
THE MECHANICAL AND PRINTED COMPONENTS of the Automaticket Bell Punch System are :—

The portable ticket-containing-and-issuing mechanism styled the Automaticket Bell Punch. Each Punch is serially numbered. When fully loaded it contains 500 tickets and duplicates printed continuously on card and paper strips respectively, and folded together in zig-zag formation. These tickets (and duplicates) are individually and consecutively projected on to a writing plate at the top of the Punch, for completion by the Conductor before issue. After completion the ticket is ejected by movement of a lever, its duplicate being simultaneously projected into the duplicate compartment of the Punch.

The Punch is equipped with all necessary safeguards to prevent unauthorized opening or use, which are fully explained later on in this handbook.

AUXILIARY DEVICES, and optional as required by Traffic Enterprises, consist of :—

I. THE SPECIAL CONTROL (OR TICKET RESERVE) DEVICE, sealed before issue, for holding a supply of pre-printed tickets (and duplicates) for issue under extraordinary conditions, either by the Conductor or by the Inspector. When attached to the Punch, it is termed the "Ticket Reserve."



THE AUTOMATIC BELL PUNCH (Open)

2. THE CANCELLER, a device in substitution of the usual ticket nipper. It is attached to the side of the case of the Automatic Bell Punch, and is used for perforating certain classes of ticket, such as Returns, etc. The Cancellor has available a large range of punches and dies of various shapes which can be changed in the Punch at any time. In this way any function usually performed by nippers can be done on the Punch itself.

3. THE CODE-DATER. This is a mechanical device which can be attached to the Punch. In its most general form it embosses on the ticket the day of the month and the Conductor's number. It is set by the Ticket Office and sealed before issue, so that it cannot be altered. The device can stamp other particulars in place of those mentioned.

4. THE "EVERLAST" PENCIL, specially designed for writing the tickets, unbreakable and of unique appearance.

5. The Waybill Holder, attached to the Punch.

Subservient features of the Automatic Bell Punch System are :—

1. A WAYBILL, of very simple form, prepared solely to facilitate ticket inspection. The use of this is optional.

2. A DAILY ROUTE SUMMARY FORM, for setting out the analysed facts of each Conductor's work.

3. A DAILY TOTAL FORM, for aggregating these analysed facts.

4. THE ANALYSER, an electro-mechanical mechanism for totalling the values of the tickets sold and for their analysis into classes. This mechanism also facilitates the extraction from the tickets of any other facts recorded thereon. It is available in optional forms.

The Automatic Bell Punch is equipped with the necessary features to ensure that fare collection can proceed without error and without hitch in the most expeditious manner. The Organisation, Conductors, and Passengers are adequately protected in all their vital interests. The mechanism of the Punch is fool and fraud-proof and of the simplest character. But even should it fail mechanically, due to

Conductor's Figure Copy Book, which ciphers have been specially designed so that each is distinctive and cannot easily be altered to have the appearance of another. If there are no shillings in the fare, the Conductor must make a stroke across the shillings space, and similarly, a stroke across the pence space when the fare is a round sum in shillings. A further safeguard is that the Conductor should write in a small "d" for "pence." This need only be a curl, but must be placed as illustrated in the Conductor's Figure Copy Book.

In the event of a Conductor making a mistake in the writing of a ticket due, for instance, to a misunderstanding between himself and a passenger, the Conductor should cancel such ticket by writing across its face "Cancel." This ticket he should issue to himself, retaining it, to be given up with his cash, etc.

The Conductor should be given to understand very definitely that, as in the case of other ticket systems, once a ticket is issued he is responsible for its value and written particulars, for it will be seen that no steps can be taken whereby the Company can be protected against abuse if latitude is allowed to the Conductor to make any kind of excuse for the issue of a wrong ticket, and such excuse be accepted. *It is one of the strong points of the system that every issue is a conscious act, and not a selective one ; he cannot, for instance, press the wrong button.*

It is suggested, especially when issuing all high-priced tickets, that the Conductor repeat to the passenger, before he actually writes them, the essential facts of the issue. If there is any misunderstanding, he writes "Cancel" on the ticket before issue, and writes and issues a fresh ticket.

The Conductor could be instructed to write upon tickets certain types of information that would be useful to the Executives, such as :—

1. Being compelled to leave would-be passengers behind because his vehicle was full.
2. Any important incident with, or complaints by, passengers.
3. Any exceptional reason for schedule delay upon the journey, giving time and place.
4. The time and place, etc., of any accident or breakdown. This, in addition to the usual report of the driver, might perhaps become important confirmatory information.

Any tickets thus issued would be retained by him and handed in with his Punch, cash and Waybill.

The Conductor would be instructed to permit his Punch to be used by Officials at any time over their own signatures, and the Official could, if desirous of so doing, retain the ticket issued.

At the end of the day's work the Conductor again writes upon what will be his last ticket of the shift :—

1. The route number upon which he is working.
2. The time of coming off duty.
3. The amount of his takings handed in, appending his signature and staff number.

This ticket, together with those which he has issued to himself during the shift, he hands in to the depot together with his Punch, receipts, and Waybill. The Punch he locks against further issue before handing in. To do this he moves a stud in the back of the Punch.

It will be remembered that, at the beginning and at the end of the strip of duplicates, there are tickets signed by the Conductor, who has become responsible for all that is written in between, with the exception of those annotations written by Officials, which latter, however, must always carry the Official's signature or initials.

THE ATTENTION OF THE MANAGEMENT IS
VERY PARTICULARLY DRAWN TO THESE
FEATURES OF THE SYSTEM :—

1. Tickets are written over a serrated base-plate and a variously coloured, double-sided, framed duplicating carbon. Thus, every ticket issued carries on its underside a facsimile of the Conductor's writing, but this facsimile is written, as it were, *by the machine*, with the result that :—

- a. The writing on the back of the ticket is in characteristic and peculiarly arranged colour, produced by the duplicating carbon plate below it. The writing on the back of the ticket and on the duplicate will agree in every particular if produced when the ticket is still in the Punch.

b. The specially engraved surface of the writing plate of the Punch gives the writing on the back of the ticket (and of course on the duplicate) a further peculiar appearance. The lines are not continuous, but broken.

c. The back of the ticket is so *printed* that erasure and subsequent falsification of the duplicated writing on it is detectable by the Conductor or other Official. This writing is not removable by the common solvents. This is of great importance in Return tickets.

These features ensure that any ticket written after issue can be immediately picked out. Conductors and Inspectors would collect tickets under suspicion, issue replicas in their place and retain the originals with names and addresses of the passengers noted thereon. The true reason for the exchange should never be given. Tickets under suspicion would be a subject for action on the part of the Management.

NOTE.—Either the duplicating carbon leaf or base plate, or both, can be changed for any shift, and a fresh colour and design substituted, whereby an absolute control is established. Therefore a percentage change of these constitutes a very sound control measure.

2. The writing plate of the Punch, when depressed by the act of writing, locks the ejection lever. No excuse is therefore valid that the ticket was inadvertently issued before completion and had to be completed afterwards.

3. The ejection lever has free travel, that is, it has to be depressed to the end of its stroke before the ticket is ejected. No excuse of accidental ejection would therefore be accepted by the Management. The ejection lever ceases to operate if the delivery aperture is blocked. The mechanism and delivery cannot be deranged thereby.

4. If the Punch is damaged, accidentally or wilfully, the records on the duplicates are still secure and safeguarded within it.

If, for any reason whatever, ejection of the ticket does not take place when required, the Punch *automatically locks* itself against further use until ejection is effected. Conductors can, therefore, assist to clear the Punch, which will automatically unlock itself when the ticket has been ejected. The Punch will then be again ready for use.

5. If the Punch fails to eject the ticket and cannot be cleared, as may happen, due to faulty maintenance, to faulty loading by the Ticket Office Staff, or to a possibly faulty strip of tickets, the Conductor can continue his fare collection by utilizing the tickets from the supplementary Ticket Reserve. This contains 50 tickets and duplicates for use in such an emergency, or when the ticket supplies in his Punch are unexpectedly exhausted.

6. Where traffic is heavy, requiring more than, say, 500 issues per shift, the Conductor can—and this is very practical—be issued with two Punches per shift. It will be remembered that Conductors operating the Automatic Bell Punch do not have to carry to their duty the usual clumsy ticket boxes, racks, etc.

7. The ticket material is designed to provide a very distinctive and attractive ticket. By printing the name or device of the Operating Company on the tickets the effect almost of a bank cheque, quite peculiar to the Company, can be provided for the writing area, and this can be contrasted in colour and design with that of the reverse of the ticket.

It is important to realise that at a given moment the entire design can be altered for a particular route, service, individual vehicle, or even individual operator.

Different, and very distinctive, tickets can be used, if desired, for certain hours or occasions, whilst, of course, each route may have its own style of ticket.

8. Waybills are of the most simple nature and are employed solely to facilitate inspection of tickets whilst on the road. Before issue to Conductors, entry on them is made in the appropriate sections of the date, the number and name of the Conductor, the Punch number, and the number of the first ticket of the Conductor's shift.

On the Waybills the Conductor enters at each fare stage the ticket number showing in the Punch.

Should it be desirable at any time to obtain special information of a route, such as peak hours, heavy traffic point numbers, etc., etc.,

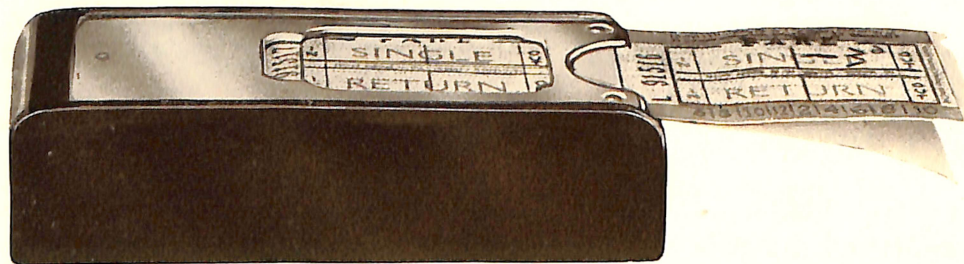
special instructions can be given to Conductors to enter the point numbers or the times upon the tickets issued at the points or times in question.

From the duplicates of these tickets the Checking Office can extract the information required.

9. The Automatic Bell Punch, issuing tickets from a continuous strip, never gives occasion for the constant and justifiable complaints of Conductors against responsibility for losses, due to wrongly printed or bundled tickets. These errors are impossible with this system of fare control.

10. With the Automatic Bell Punch can be provided a pencil which has been specially created to be almost *unbreakable*, to have a long life, and at the same time to be singularly low in cost. Such features are necessary for the successful operation of this system. These pencils are particularly smart in design and appearance, and bear throughout their length the imprint of Bell Punch Company.

It is supposed that they would be issued with the Punch and returned by the Conductor at the end of his shift.



SPECIAL CONTROL (OR TICKET RESERVE) DEVICE

It is 4 inches long and can be slipped by Inspectors into the pocket. When attached to the Punch, for Conductor's use, it is known as the Ticket Reserve Device. Its capacity is 50 tickets and duplicates

TICKET INSPECTION.

Any Ticket System has, of necessity, to be capable of giving a proper indication to the Passenger of the contract he has made with the Company for conveyance. It must also render a true account of the takings of the Conductor, to the complete satisfaction of both himself and the Company.

Unfortunately it has also to be of such a nature that an adequate control can be imposed by the Company to prevent abuse by any individual, to the detriment of the Conductor's reputation or the interests of the Company.

Any system must therefore introduce practical mechanical measures directed to the mitigation of, and the exposure of, irregularities. These measures must be capable of discerning sharply and conclusively between the unintentional irregularities and the premeditated.

It is recognised that the fare collection system used for so many years in this Country has through the years made it possible for honest men to take up the calling of Conductor with real pride and a sense of fairness. This alone is responsible for producing the degree of honesty that at present exists.

It has always been held by Bell Punch Company that it is morally wrong for any system of check to be imposed that does not aim at real effectiveness. Any system that of itself affords opportunities for irregularities cannot be justified. The men and their Unions, the Management and the Law itself must, and will, turn against such a system.

The check of the Automatic Bell Punch System is infallible and is so designed that even the presence of an Inspector on a vehicle carrying on his routine work cannot be interpreted as personal criticism of the Conductor.

This opportunity is taken to recapitulate the functions and the conduct of Travelling Ticket Inspectors, and the manner in which they fall into their allotted place in the scheme, in which they are, as in all reputable systems of fare control, essential.

TRAVELLING INSPECTORS' ROUTINE.

The first act of an Inspector on boarding the vehicle would be to issue to himself, from the Conductor's Punch, a ticket upon which he will have written the time and place at which he boarded the vehicle, his name and staff number. He should also take possession of the Conductor's Waybill and, with this and the ticket in his hand, he should proceed to inspect the tickets held by passengers.

His knowledge of the fare values and stages which are on the issued tickets and of the serial number of the ticket he holds should enable him immediately to confirm the correctness of each issue by referring to the number appearing on the Waybill at the point at which each ticket was issued.

Every ticket so inspected should, in addition, be examined on the back, since every stroke of all writing on the face will be found inversely duplicated on the back, and here let it be stated that one of the phases of the new technique to be acquired by Inspectors is the quick reading of writing and figures that are laterally inverted.

It is obvious that on the backs of the tickets all writing and figures will appear written from the right to the left. The written characters will have the appearance of their image in a looking-glass.

It is not difficult, with a little practice, readily to read such inverted characters. Compositors and Typesetters are accustomed to reading dense printing type thus arranged, and it is suggested that all Inspectors should subject themselves to the necessary practice, and familiarize themselves with the reading of laterally inverted writing and figures.

The peculiar duplication of the Conductor's writing on the backs of the tickets is to be considered a very important part of the scheme, as it renders the alteration of a ticket after issue an exceedingly difficult matter. Any erasures are noticeable at once.

The platform of the Punch on which the ticket is written is so serrated that the duplication of characters on the backs of tickets is not in continuous lines, but in a series of dots or broken diagonal lines, or other pattern, which cannot without difficulty be copied, and almost certainly not under the conditions of a Conductor's work.

Should the Inspector have any doubts in regard to any particular ticket, he should collect and retain such ticket from the passenger, and issue in exchange one of his Control Tickets of identical availability. He may even, if occasion arise, collect tickets from all the passengers in the vehicle and issue Control Tickets from his supply in exchange. In all such cases he would, before leaving the conveyance, again issue to himself a ticket from the Conductor's Punch, having written thereon the number of the ticket, or tickets, under inspection.

It may even be advisable that such action be made occasionally for no apparent reason, as the mere fact that he is entitled to do this, without giving any reason for so doing, has a very great moral effect.

Under no circumstances are Inspectors to issue tickets *against cash payment* from their Control Device. If any passenger is found riding without a ticket he should be asked the place at which he boarded the vehicle, and if it were reasonable that the Conductor had not had time to issue a ticket to such passenger, then it would be sufficient for the Inspector to draw the attention of the Conductor to the fact, and a ticket should be issued by the Conductor before the Inspector leaves.

If it is found that the ticketless passenger had boarded the vehicle some distance back the delay in the issue could be noted on a ticket from the Conductor's Punch, to enable the Management to take what disciplinary action it considered necessary.

Inspectors should, at the end of a day's work, attach to their reports all tickets that they may have collected during the day, and all duplicates of the tickets they have issued from their own Control Ticket supplies.

THE ATTENTION OF THE MANAGEMENT IS VERY PARTICULARLY DRAWN TO THESE FEATURES OF THE SYSTEM :—

1. Inspectors may be supplemented by ordinary Conductors who, equipped with their Punches, board the vehicles anywhere on the routes. A boarding Conductor would write upon a ticket in his Punch the stage of boarding, as well as the serial number of the ticket showing in the regular Conductor's Punch. He would then proceed to collect all tickets held by the passengers, issuing in exchange exact replicas produced from his own Punch.

These tickets collected from the passengers could be sent in to Headquarters to be compared with their duplicates from the regular Conductor's Punch. Any alteration to a ticket which had been effected or attempted after issue from the Punch would thus be laid bare.

2. Inspectors should never ask Conductors for explanation of apparent irregularities. Inspection is thus guarded against its likely construction as necessary examination of the Conductor's acts.
3. It is essential that Inspectors, once having boarded the vehicle, make their examination thorough and complete.
4. Never should an Inspector miss an irregularity.
5. Methods to ensure uncertainty will be found supremely effective.

THE TICKET OFFICE

In this department the Punches are serviced, and the records of each Conductor's work are assembled and passed to the Checking Office for analysis. These records, known collectively as Shift Records, include the ticket duplicates available from the Punch, the tickets collected as tender for Return tickets, etc., and Waybills.

The Automatic Bell Punch, as mentioned under "The Collection of Fares by Conductors," is issued to the Conductor fully loaded and under seal. The seal includes a catch which can only be reached when a paper seal covering it is torn. The actual act of freeing the catch is performed by the Ticket Office Staff, by means of a thin rod, which it pushes through the paper seal and moves through an arc, so that, in this movement, the seal is completely torn. The paper seal itself is not available for replacement except when the Punch is open, which opening takes place when the catch referred to is depressed by the rod.

The paper seal is available in a range of colours, and is printed with identification particulars which can be infinitely varied. These printed particulars are not visible from the exterior of the Punch.

When the Punch is open, the Ticket Office Operator can, with the same rod, release the Conductor's Lock. This is situated in the back of the Punch.

Having opened the Punch the Ticket Office replenishes the ticket supply, attaching with the aid of the Splicer the necessary quantity of tickets and duplicates to the old stock in the Punch. The latter is a positioning platform to enable this to be done expeditiously and correctly.

The Ticket Office also removes from the Punch the duplicates of issued tickets, and changes when necessary the carbon frame by which duplication of the Conductor's writing is produced on the backs of the tickets and on the faces of their duplicates. The Ticket Office then places a new paper seal in the sealing device and closes the Punch. It also replenishes the supply of Reserve tickets in the Ticket Reserve Device which it seals. The Punch is now ready for re-issue.

It is the duty of the Ticket Office to report any damage which has been done to the seals, or to the mechanism of the Punch. It is also its duty to see that the Punch is working properly before passing it out for issue, and it signifies its approval of the Punch for issue by signing a ticket which it issues to itself. The duplicate of this ticket therefore becomes the first record of the Shift.

THE ATTENTION OF THE MANAGEMENT IS PARTICULARLY DRAWN TO THESE FEATURES OF THE SYSTEM :—

1. The Ticket Office should receive the Punch locked by the Conductor against ticket issue and with the Punch seal intact.
2. The security of the duplicates, which these features assure, prevents any argument as to the authenticity of the duplicates, including that on which the amount which he has paid in is stated.
3. The Ticket Office must receive the complete record of the Shift, namely : the Punch, in which are the unissued tickets and Reserve tickets, the duplicates of tickets and Reserve tickets issued, any tickets accepted as tender for Returns, etc., and the Waybill. These it assembles into Shift Records.
4. The work of the Ticket Office is of the simplest character ; the servicing of the Punches can be very quickly performed. This consists merely of replenishing the supply of tickets and duplicates and substituting a fresh carbon frame and seal.
5. The Ticket Office is responsible for watching the condition of the Punches and for notifying any Punches which are received with defects, whatever the cause. It is not its duty to investigate the cause.
6. It is the responsibility of the Ticket Office that the Punches when issued are fit and ready for service.

THE CHECKING OFFICE

In this department are conducted the examination and analysis of the results of each and every Conductor's work. It is separate from the Ticket Office, which deals with the servicing of the Punches themselves.

As indicated previously, the Ticket Office, as part of this general servicing, extracts from the Punch the used duplicate tickets, around which it encircles a rubber band. To these duplicates it attaches the Conductor's Waybill and any loose tickets he has handed in such as cancelled tickets, those he has issued to himself, the loose duplicates of Reserve tickets he has issued, tickets collected against exchange tickets, etc. The whole batch, now known collectively as a Shift Record, is sent to the Checking Office.

It is suggested that suitable trays be employed to contain a quantity of these Shift Records, the trays being identified as "Route Trays."

The Route Trays containing the Shift Records are passed over to the Checking Office, where each Shift Record is totalled and analysed by means of the Analyser, in accordance with the routine practice set out in the handbook of Operative Instructions. A simpler and cheaper mechanism, termed the Re-reader, is available for this purpose in the smaller Traffic Enterprises. It is a modified form of Automatic Bell Punch suitable for displaying tickets for analysis.

The results of analysis would be recorded on loose-leaf sheets called "Daily Route Summaries," properly prepared for the entering of all information required by the Management.

Appended to this Booklet is an illustration of a stock form of Daily Route Summary. At the top of this should be entered :—

- The name or number of the route.
- The day and date.
- The mileage of the route.

The form is columnised as under :—

1. The Conductor's name and staff number.
2. The number of journeys and total miles travelled.
3. The total of fare tickets issued.

4. Their cash value as totalled by the Analyser.
5. The amount of cash paid in by the Conductor.
6. The amount of "over" or "under" receipts from the Conductor.
7. Dissection of tickets, such as :—
 - (a) Ordinary.
 - (b) Workman's.
 - (c) Child's.
 - (d) Returns.
 - (e) Exchange, etc.
8. A "Remarks" Column in which could be enumerated, together with their proper ticket duplicate numbers, those annotations found on the duplicate ticket strips which are of value to the Management.

The Checking Department would file all Shift Records in such manner that they could be quickly referred to. Questions are likely to arise concerning various Record particulars ; those in which there are variations between the amounts of cash paid in and the true aggregates of cash value as totalled by the Analyser are particularly likely to be required. It is natural, of course, that in the event of a discrepancy the duplicate strip from which it arose would be totalled more than once in order to make absolutely certain of the correctness of the result.

Important annotations by Inspectors may call for Managerial action ; the filing system, therefore, should allow any particular Record to be readily available within a reasonable time after the event. Similarly, reports by Conductors themselves recorded on the duplicates may be required at some early date.

As the Shift Records are rapidly transferred to proper forms, and as action is quickly taken on them, their accumulation over a period of time is avoided. They should be returned *to the supplier* for destruction. *This is important.*

In a large Organisation it could be arranged that the routine totalling and analysing part of the Route Summary could be accomplished by the ordinary Staff engaged on routine analysing, when special Scrutineers could deal with annotations calling for action. No

undue discretion would thus be left to the ordinary Staff engaged on routine analysing.

It is suggested that such Scrutineers should also be allotted the duty of dealing with Inspectors' Reports, so that they would have the opportunity of comparing such reports with the annotations found on the respective Conductors' duplicates.

It will be realised that the Analyser is, in addition, an Adding Machine, which can readily be employed for the mechanical totalling of the Daily Route Summaries.

The Daily Route Summaries should in turn have their aggregates posted daily to a Daily Route Total, an illustration of the stock form of which is appended. This form gives at a glance all the basic facts of a given day's operations of the entire Undertaking. In even the largest organisation this form should be available before the close of business on the following day.

The Daily Route Summaries would eventually be placed in binders, to be dealt with in the ordinary course of Management.

THE ATTENTION OF THE MANAGEMENT IS ESPECIALLY DRAWN TO THESE FEATURES OF THE SYSTEM.

The Checking Office can be organised to provide all the statistical and special information required by the Management. This information can be provided by Conductors on their ticket duplicates, and the significance of their special or routine notes on the tickets need not be known to them. Tickets can be written to give information only, and not as fare tickets, for example :—

1. Whenever it is desired to have special information ; for instance :—
 - (a) A Conductor can sign a ticket at 12 o'clock and another at 1 o'clock. The Checking Office can obtain from the duplicate tickets between these two signed tickets special records of this particular hour of work, which it can enter on an additional and separate line of the Daily Route Summary.
 - (b) A Conductor can also enter on tickets the point numbers and the times at which his vehicle is full.

(c) The times at which the engine was switched off or re-started.

It must be remembered that facts such as the above may at any time be recorded on the same Punch by an Inspector. This possibility ensures that no criticism can be levelled at any employee by another.

2. If an "Error Account" be opened and the aggregate of "overs" and "unders" be posted every day to its credit or debit side from the Daily Route Total, this information can be very easily and carefully watched.
3. If required, very careful control can be established over the duty hours of individuals. Times of issue could be written upon the tickets by Conductors instructed to do so and significant facts obtained from such timed tickets could be extracted by the Checking Department.
- 4 (a) The notes column of the Daily Route Summaries can include any particular ticket number or numbers which bear any special message to the Management. These messages may be as the result of special instructions by the Management, such as :—
 1. Calling for reports on Delays in Schedules.
 2. Taking the names and addresses of passengers requiring Season Tickets.
 3. Recording operation difficulties with police, queries on state of roads, etc.

(b) The spontaneous reports of employees to headquarters, such as :—

1. Recording the name and address of a troublesome passenger.
2. Any serious complaint.
3. Advancing any suggestion of possible value.
4. Recording any critical happening such as the time of an accident, giving names and addresses of witnesses.
5. Calling attention to a possibly falsified ticket.

For these particulars several consecutive tickets may be used, if necessary.

THE AUTOMATICKET BELL PUNCH SYSTEM

commends itself because :—

It has been created with a knowledge of fare collection and control in road passenger transport enterprises which is unique.

The application of this knowledge has resulted in a System which is the subject of a series of patents covering features which are aimed at the protection of the System from breakdown, by accident or by acts with fraudulent intent, and to make it absolutely efficient.

These features are :—

1. The impossibility of production of a ticket except as a conscious act.
2. The impossibility of production of a ticket other than in the form required.
3. The certainty of production of a ticket which coincides with the service it confers.
4. The impossibility of production of a ticket without a complete and true record of that production.
5. The impossibility of that record being falsified without danger of detection. Incontrovertible proof of the fraud is always available.
6. The suitability of that record for rapid and complete analysis.
7. The availability of production of traffic facts unobtainable by any other system.
8. The possibility of cross-checking the work of operators without this cross-checking being looked upon as an act of suspicion.
9. The ability of controlling any traffic system of any size and of any complexity, in the simplest manner.
10. The reduction of fare collection and control to its simplest exact form.
11. The independence of the system, to the highest possible degree, of human integrity and mechanical reliability.
12. The collection and control of general fares at a speed unattainable by any other system.

