Traffic Control in Edinburgh

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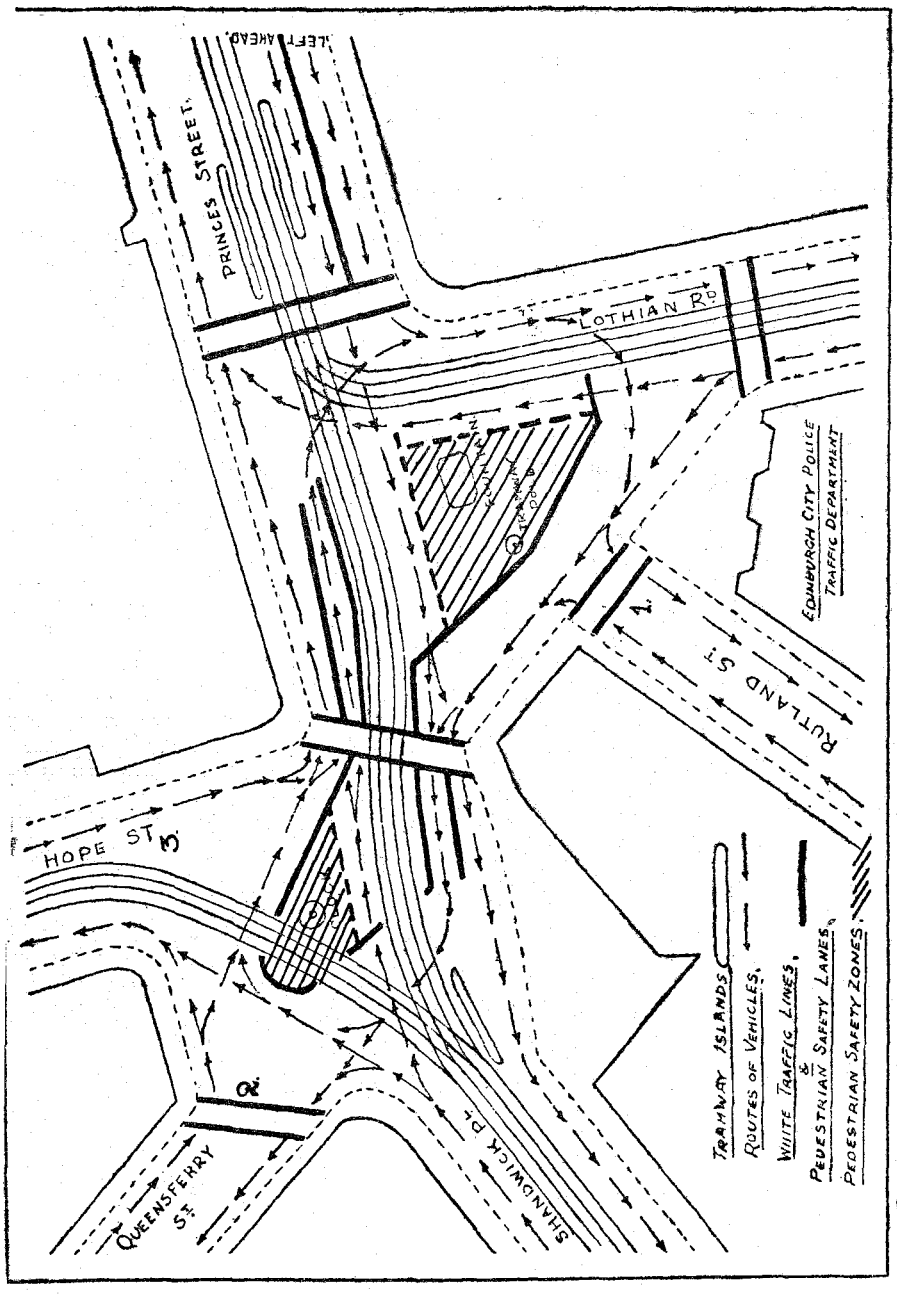
MOST cities and towns to-day are troubled by traffic congestion. Physical and financial limitations imposed by enormous investments in great buildings abutting narrow, antiquated streets preclude effective widening in the older business centres. Corporations anxious to meet requirements to facilitate speedy traffic movement are practically held to ransom. The cost of improvements steadily grows as the demand for wider streets, better pavements, and more adequate traffic control increases. This building question constitutes a real challenge to civic government. Parsimony and lack of foresight in dealing with the problem will only aggravate conditions in the future. Prompt and decisive action is therefore needed. Unfortunately there is no single procedure which can free our cities from traffic congestion. The problems concerned are too new, and changing too rapidly, to have developed any standardized solution.

The actual work in solving specific problems naturally falls upon a few experts. The most logical way for a community to meet its traffic obligations and to prevent a repetition of the same problem in the future is to formulate its building plans intelligently so as to prevent the reduction of our streets to a state of impassability.

In the Edinburgh Town Council we have one of the most progressive civic bodies in the country. They are keenly interested in the question of up-to-date traffic control and the relief of congestion. They are jealous of the good name which the city maintains in the van of progress in this respect. In this they are ably seconded by the various heads of departments, and it may be claimed that those who are responsible



PLAN OF WEST END CROSSING SHOWING SEMI-GYRATORY SYSTEM OF TRAFFIC CONTROL, AND PEDESTRIAN SAFETY ZONES WITHIN THE "WHITE" LINES.

Traffic from side streets, Nos. 1, 2, and 3, must go round by the left, while main traffic streams travel direct ahead. This arrangement keeps the pedestrian safety zones in the centre of the crossing free from traffic and enables people to cross in comparative safety. Over 2,000 vehicles pass over this crossing each hour at busy periods of the day.

for the police administration of the City are active supporters of the Council in this respect.

Large costly schemes for road and bridge widening are at present being carried out, not only in the centre of the City but in the outlying districts, to relieve traffic congestion. The authorities have also encircled the City with some of the finest by-pass roads in the country. Many crossings have been made more adaptable for traffic, blind corners and bad bends being removed, and ' white lines ' laid down at recognized danger points to permit of safe driving.

Traffic Department

One of the most outstanding successes in recent years in connection with police administration in the City was the formation of a special traffic branch of the service in March 1926. Since its inauguration great improvements have been effected in traffic conditions generally and in the conduct of drivers in particular. This has resulted in a large diminution in the number of street accidents.

The traffic department now consists of one Chief Traffic Officer, eight patrol constables with four motor-cycle combinations, and three constables for clerical duty indoors. The Chief Traffic Officer supervises generally all traffic matters within the City and makes the necessary recommendations for improvements in that connection. In addition he has to periodically visit all schools under the Edinburgh Education Authority and deliver lectures on ' Safety First ' to the children. Over eighty schools were visited during the year 1929.

All accidents occurring within the City are recorded on special cards and forwarded each morning by the Divisional Superintendents to the Traffic Department. Each division uses a different coloured card in order that they may be distinguished at a glance. These cards are filed in cabinets according to date and place for the sake of easy reference. This enables all correspondence regarding accidents to be speedily dealt with. A charge is made for each copy of a police report sent to enquirers.

From these accident cards the Chief Traffic Officer is enabled to tell the districts, or local areas, where street

accidents are most numerous and in need of special supervision by the traffic patrol. He can then detail his staff to the best advantage in order to remedy the evil. The cards also enable him to compile with accuracy his accident statistics and special returns.

The traffic patrols, or ' speed cops ' as they are popularly called, have a very busy time, checking infringements of the motoring laws and kindred traffic regulations. Neglect of these laws and regulations is the principal cause of street accidents. These patrols are of necessity men of keen perception and judgment and capable of quick mental action as well. They have a special knowledge of motor-car construction and traffic laws, and, of course, are exceptionally good drivers. They have to forget self in rendering service to others. This business of saving the lives and limbs of the citizens in the maelstrom of present-day traffic is a very high calling, and there is keen competition to enter this branch. These mounted sentinels of safety on their petrol-driven steeds cover many miles of roadway daily, and act as a deterrent to the ' road hog ' and negligent driver.

The brakes of motor vehicles call for special attention, and the patrols during the year 1928 found 358 vehicles with defective brakes ; the drivers were either cautioned or reported. These defective vehicles are a menace to all concerned, and the patrols are instructed to see that each vehicle has good brakes and that these are checked periodically, as neglect of this precaution may cost a human life.

Bad driving is being stamped out with a firm hand. The driver who at one time took chances has been educated to the fact that carelessness does not pay when the patrols are about. In addition to detecting offences the patrols also caution pedestrians whom they find doing acts likely to lead to accidents.

The system of using motor-cycle combinations fitted with speedometers has been in operation since the Department was inaugurated and has given every satisfaction. Notwithstanding the large number of persons dealt with by the traffic patrols complaints are very rarely received from persons dealt with, and it is seldom that the officers concerned are cited to give evidence

in the court. This satisfactory condition of affairs is probably due to the fact that only those who have exceeded the speed limit by a large margin are reported to the court, whilst others are allowed to go with a caution administered by the officers on the spot or by a letter of caution sent by the Chief Constable. During the year 1927 the traffic staff reported 1,339 offences for process, while 10,667 persons were cautioned by them for other offences detected. About 3,400 of these were speeding offences. In the year 1929, 1,487 persons were reported for process while 7,946 cautions were administered. This method is adopted instead of sending everybody to court. A card index system is kept for recording particulars of persons cautioned, and if a subsequent offence of a similar nature is committed the fact is mentioned on the complaint furnished against them. It is not considered advisable to report persons for exceeding the speed limit by a few miles, as practically all drivers, at one time or another, exceed the limit ; it is necessary to use discrimination in this respect. By reporting the worst offenders and cautioning the others the methods adopted by the police are more favourably looked upon by the court and motorists in general, as, when all is said and done, few people have any sympathy with the road hog or reckless driver.

There has been no difficulty in obtaining convictions in the City by the practice of using machines fitted with speedometers, as the system of checking the accuracy of the speedometers used on the police motor-cycle combinations gives a sense of security, and satisfaction to the court, the police, and drivers alike. The speedometers are tested with stop-watches over measured police controls at various speeds. A man is stationed at each end of the control with a stop-watch and the time is checked in this way. Also, as an alternative, the watches are carried in the side car of the combination and are started and stopped by the officer as he enters and leaves the control. The checking arrangements are carried through by the Lieutenant in charge of the Traffic Department, who is, when necessary, placed in the witness box to speak to the accuracy of the speedometers as tested on the different dates. The speedometers are fitted on the handle-bars of the machines in such a way that they are easily seen by the driver and his

colleague seated in the side car. When using the machines in the darkness the speedometer is illuminated by a small electric bulb which is attached to the speedometer.

In following a motor vehicle and timing it, it was found advisable to keep about forty or fifty yards in the rear of the pursued car to avoid any possibility of running into it should the driver suddenly draw up. The officers are always in uniform when operating the machines. This ensures that motor drivers have no opportunity to say that they were taken at an undue advantage, and also provides against the possibility of a motorist refusing to stop when signalled to do so.

The presence of any police machine in a given thoroughfare is generally all that is necessary to check effectively excessive or reckless driving. Motorists in passing each other give the recognized signal by means of the flapping hand or by flashing their lights, indicating that the police patrols are in the vicinity, with the result that every one exercises caution. This is a great help to the police and is in the best interest of safety. Prevention is better than cure every time, and is the principal duty of the officers engaged in this branch of police work.

The traffic patrols have a roving commission in the City and give the necessary element of surprise in detecting and following up speeding motorists. As they move quickly from one thoroughfare to another this acts as a deterrent to reckless drivers, as they are never sure when to expect a police machine to appear.

The following table gives the number of vehicular accidents in the City during the past four years and shows how the numbers have been reduced, notwithstanding the great increase in the volume of vehicular traffic.

VEHICULAR STREET ACCIDENTS

Year	Fatal	Non-Fatal	Total
1926	47	1,754	1,801
1927	57	1,279	1,336
1928	53	1,036	1,089
1929	47	991	1,038

The City was in the proud position of heading the Govern-

ment list with the largest percentage of reduction in the number of street accidents in the year 1928.

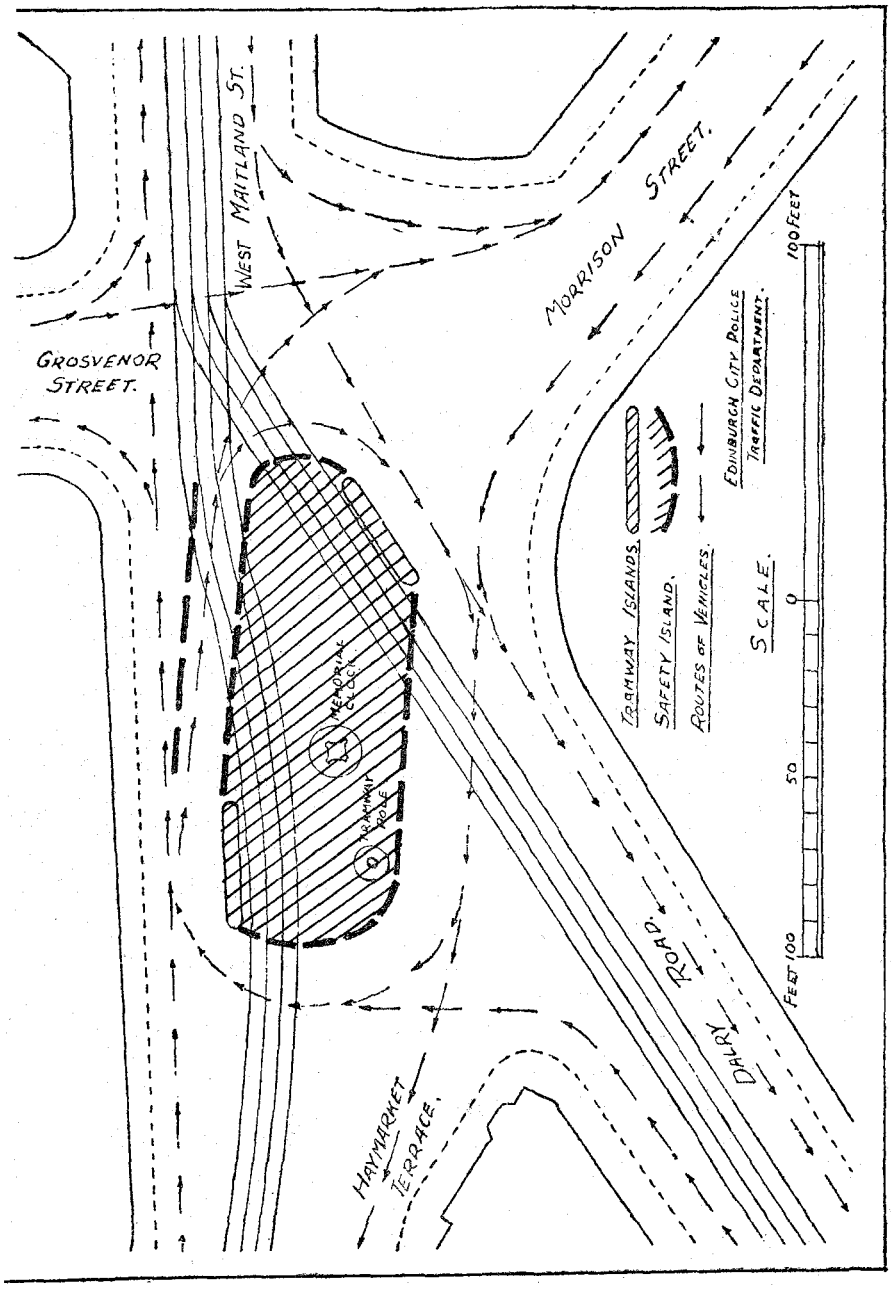
Edinburgh, notwithstanding its traffic problems, is very immune from serious accidents, and this is without doubt due to the effective work of the traffic patrols. The public appreciate the work of the patrols and have come to recognize that they are working conscientiously for their protection.

Omnibus Traffic

The effective control of motor omnibus traffic has to receive very careful consideration by the police in all parts of the country, and there are few places which require this consideration more than Edinburgh, which has not only a very fine fleet of this class of vehicle plying for hire within the City but has a large volume of such traffic from other centres, more especially during the tourist season. The Magistrates have, however, thanks to powers obtained in the past, been able to deal pretty effectively with the question of bus control. It sometimes happens that some bus proprietor who does not see eye to eye with the sensible methods adopted to avoid needless competition and congestion, is prepared to be defiant and causes the powers that be to enforce the regulations and prevent chaos.

The motor omnibus services within the City are principally operated by the Corporation Transport Department, and no detrimental competition is allowed. If any service is authorized necessitating companies or individuals running over any part of a route within the City in competition with the Transport Department's vehicles, they can only do so on the condition that they charge a higher fare. This naturally deters competition.

A large limited liability company, which had the good fortune to be first in the field and provides up-to-date omnibuses, has practically a monopoly of the services plying for hire between the City and outlying areas. There are a few small services otherwise controlled, but these are not of much consequence. The Magistrates keep a close watch on these services and make every endeavour to cut out unnecessary competition by fixing the times of departure from the various



PLAN OF HAYMARKET CROSSING SHOWING SEMI-GYRATORY SYSTEM OF TRAFFIC CONTROL, AND PEDESTRIAN SAFETY ZONE WITHIN THE "WHITE" LINES.

All tramcar passengers are lifted and discharged in the safety zone, and traffic gyrates round the zone by the left.

centres. When a service is considered adequate on any route no further applications to increase the services are entertained by them.

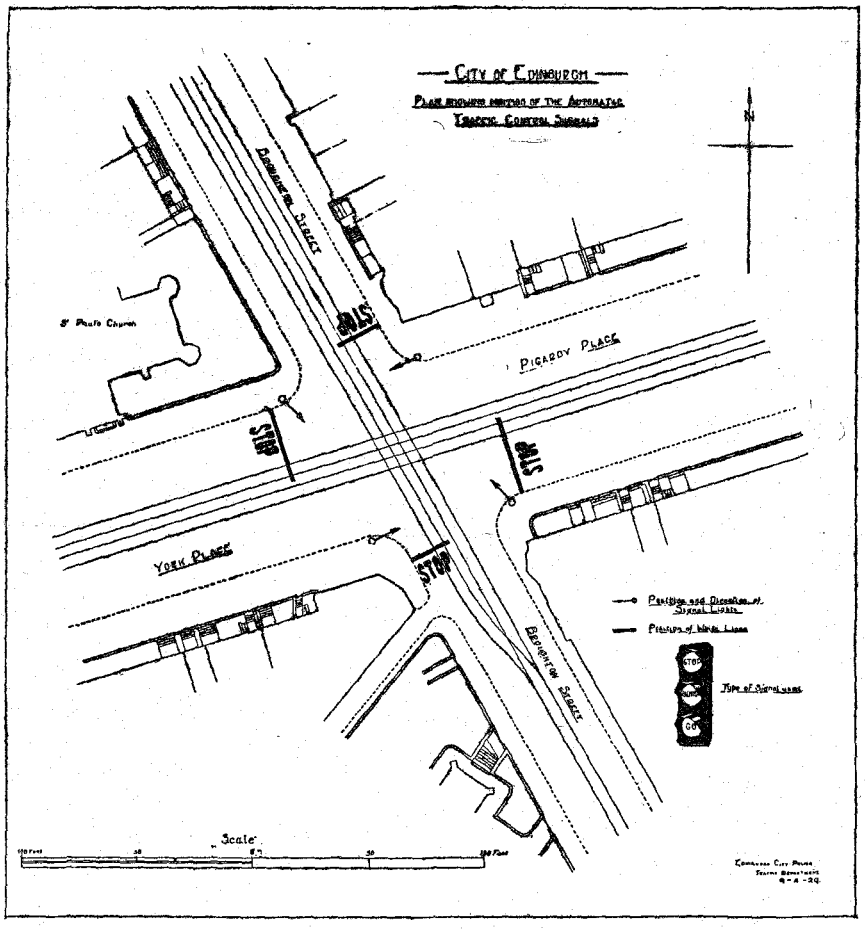
Not only is the number of services considered, but different routes are allocated when it is thought that the number of buses on any route is adequate to meet requirements. Whenever possible an alternative route is brought into use to enable traffic to be more evenly distributed and to avoid already congested areas in the City.

The result of these precautions is that little trouble is caused through excessive competition with its attendant dangers.

Automatic Traffic Control Signals

The first set of automatic traffic control signals was erected in Edinburgh in March 1928. The experiment proved very successful, and since then sixteen additional sets have been installed at right-angled crossings. Many deputations and interested persons from all parts of the country have visited the City to view the working of the system, and on each occasion these people expressed great satisfaction regarding the admirable working of the installations. Twenty constables have now been relieved from the duty of traffic control and the regulation of traffic is just as effectively carried out at far less expense. The initial cost of a set of signals, and their erection, is approximately £120. The cost of maintenance for each set amounts roughly to about £15 per annum. The saving effected, therefore, is considerable when compared with manual control by policemen.

The system adopted at each crossing has four one-way three-coloured signals erected at each corner, and so placed that drivers are guided by the signal directly facing them on the far left-hand corner of the intersection. This position for the signals was decided upon as it enables traffic to be halted at the building line on the approach side of the crossing, whereby valuable road space and valuable time at busy points are saved. When compared with signals placed on the near or approach side, it has the decided advantage that every driver



This sketch shows the positions of the automatic Traffic Signals and the road markings—' Stops ' and ' White Lines.'

has a direct view of the signals, no matter how many lines of traffic are operated.

Very few crossings in Edinburgh—or indeed in many other places—are suitable for automatic control signals being placed on a centre standard, as advocated by some motorists and others. Unless crossings are exceptionally wide the drivers of heavy motor omnibuses and lorries would be seriously obstructed and delayed in making a right-hand turn. This reacts on and delays other traffic at those junctions. A centre standard has also a disadvantage that, should anything go wrong with the lighting during the hours of darkness, the unlit standard would prove a source of danger to drivers and no doubt cause accidents. Further, if a centrally suspended set of signals had been installed, they would require to have been placed at such a height above the street level that the drivers of low-built cars would have considerable difficulty in seeing the signals as they approached the crossings; then, again, where a tramway service is in operation a tramway car standing at, or near to the crossing, would completely block the signal from the view of an approaching motor-car driver. Signals placed on a centre standard have also this great disadvantage that they compel drivers to keep looking upwards—instead of on the roadway directly in front—thereby endangering pedestrians who may be crossing the street or inadvertently stepping off the footway.

The colours used are those now familiar to drivers all over the country and recommended by the Ministry of Transport —RED meaning STOP, AMBER meaning CAUTION, and GREEN meaning GO. Permanent white lines with the word STOP have been inserted in the road surface on each of the near or approach sides of the crossings.

Suitable regulations have been passed by the Magistrates for controlling traffic at these road junctions.

Drivers generally have signified approval of the system of automatic control, but some of them favour being allowed to take the left-hand turn against the ' Stop ' signal; such drivers would like that filtration should be allowed to the left, no matter whether the signal is for or against them. The arguments, however, against left-hand filtration are pretty obvious.

If the control of vehicular traffic was the only question involved the suggestion might be entertained at wide crossings where filtration might be free from danger, but the signals are there for the guidance of pedestrians as well as drivers and their interests must be safeguarded if they are to take full advantage of them in crossing the street.

The timing of these signals is of the utmost importance, and it is necessary to consider carefully the position at each crossing before fixing the periods for the flow of traffic.

In Edinburgh observation was kept and statistics compiled of the number and class of vehicles passing these crossings in each direction. These figures gave a very accurate idea of the traffic conditions and of the times required to ensure that no unnecessary delay should occur. It was found that main thoroughfares in the City worked most smoothly with a 40 seconds GO period and 20 seconds STOP period for cross traffic from the subsidiary streets, with a 3 seconds CAUTION period intervening. In one of these main routes five sets of signals have been installed within a three-quarter mile distance. It is, therefore, worthy of note that even if a driver had the misfortune to be held up—and this seldom happens—at each crossing by the red signal being against him, delay through this cause would only amount to 1 minute 55 seconds for the five sets of signals. That is, surely, a small fraction of time to lose in the interest of safety in a busy thoroughfare. At other crossings in the City where traffic is not so dense, 20 seconds each way with a 3 seconds cautionary period was found most suitable. The less traffic is held up at these points the more expeditiously it is handled and the greater the satisfaction to drivers. If the period of timing is too long, it just means that extensive traffic queues form and drivers become impatient, more especially if there is no cross traffic.

FLOOD-LIGHTING

Another experiment of an interesting nature was carried out with a view to illuminating constables on point duty after dark. The method adopted was an arrangement of flood-lighting from below the surface of the street. The experiments

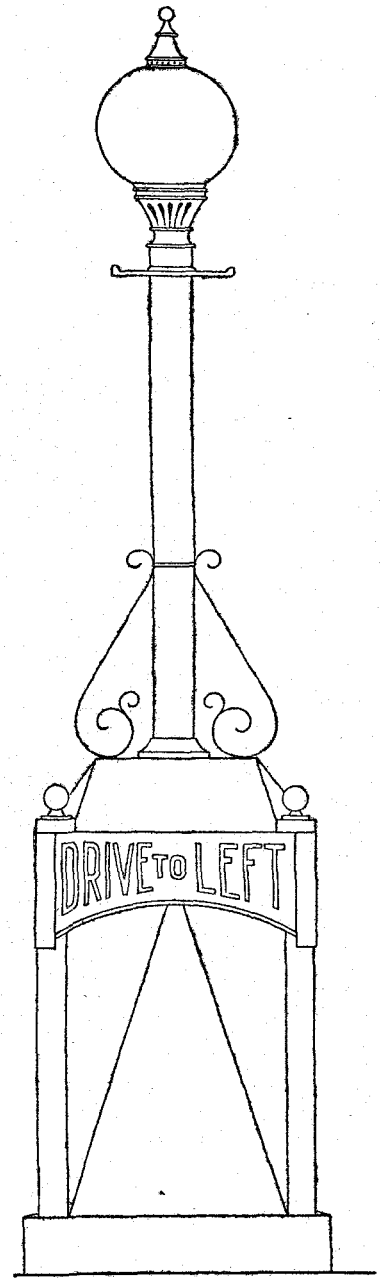
show that it is quite possible to project beams of light from underground of sufficient intensity to bring the constable and his traffic signals into prominence. The device incorporates four electric lamps which are secured beneath a manhole cover, twenty-five inches square, the lights being safeguarded by sections of prism glass to withstand passing traffic. The lamps used have a maximum capacity of twelve volts and are run off the mains, thus necessitating resistances. These resistances are used to provide a foot warmer for the constable.

The experiments were successful, but it was found that the manhole cover of twenty-five inches was rather on the small side and will ultimately require to be replaced with one about thirty-six inches square in order to diffuse the flood-lighting properly. This method of lighting the constable from below is preferable to the use of overhead spot lights, as the latter are inclined to blind an officer who turns and directly faces the lights.

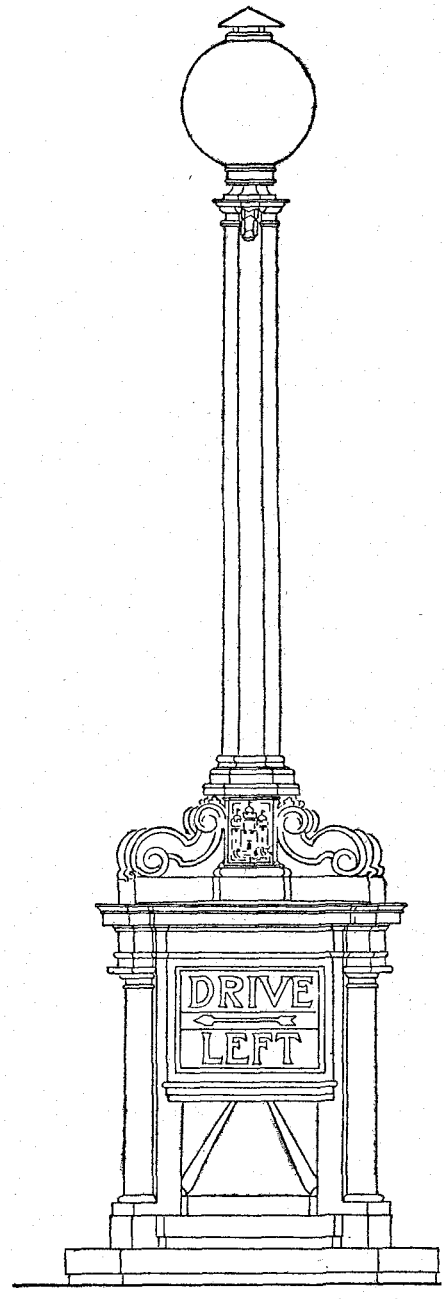
Traffic Lights

Among other traffic improvements carried out was the erection of an experimental traffic light at one of the busy 'T' crossings in the City. This crossing is wide and carried a large volume of traffic, but owing to the awkward alignment of one of the abutting streets many drivers passed over the crossing on the right or off side, causing many unnecessary and lamentable accidents. In order to avoid these happenings a traffic light was evolved, embodying the words 'Drive to Left' on three sides of the light, which is triangular in shape. The conical base is white and along with the notice 'Drive to Left' is illuminated after dark by hidden electric lights. The lamp is placed on a small island to assist pedestrians to cross the street in safety. The appearance of this traffic lamp, which was erected from standard material and cost less than £10, is very distinctive both in daylight and after dark, and is so conspicuous that drivers cannot pass without seeing it. The result is most satisfactory, as all traffic now passes on the left of the light, and accidents have been practically eliminated.

So pleased were all concerned with the experiment that a new traffic light embodying the principles mentioned, but on



No. 1.—The experimental traffic light for 'T' crossings with notice 'Drive to Left' and white cone below illuminated by hidden lights.



No. 2.—The new traffic light for 'T' crossings decided upon after the successful experiment and embodying the same principles.

a more ornamental scale to meet the question of amenity, was planned by the City Architect and accepted by the Corporation. Orders were given for twelve of these beautiful and useful structures, and these have been erected at suitable 'T' crossings.

The illuminated base and 'Drive to Left' are placed so that they are practically on a level with the driver's line of vision. The difficulty generally experienced with a high sign is that it is frequently unnoticed by drivers in low-built cars, but this is avoided by the use of this traffic light.

Safety Islands

In order to remove any cause of delay to traffic in the centre of the City tramway safety islands have been put down where space is available. This permits free traffic movement; for, when there is no island, traffic is constantly checked to enable people to get on and off the tramcars in safety. This is not necessary when an island is provided. These islands are a great boon not only to tramcar passengers but to timid people crossing among streams of traffic. Notwithstanding this, they at one time constituted a great danger to motorists as, on wet nights especially, the island and overhead lighting seemed to merge with the background, and many collisions occurred causing injury to persons and great damage to motor vehicles. In the year 1927 these collisions numbered twenty-three and were becoming so frequent that various experiments were tried to improve the overhead lighting, but this was of no avail. It was then agreed to place a red light on the top of the pawl post on the approach end of the islands. This has cured the evil and allows traffic to proceed in safety.

The result of the various improvements effected in traffic affairs has been to give the City one of the best systems of traffic control in the country, and further improvements are foreshadowed in the near future.