The New Wall Telephone

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Fig. 1 : The final design which was developed by Ericsson's in collaboration with the Post Office Engineering Department

IN THE EARLY DAYS OF THE TELEPHONE, WHEN the apparatus was bulky and not easily moved around, the wall telephone was a popular and convenient type of instrument. With the coming of neater table telephones its popularity waned, but for some purposes a wall telephone is still ideal for subscribers and it always finds favour with engineers because it is a combined set easily installed, has one less cord than a table set and, once installed, cannot be dropped and broken.

The first telephone in the Post Office series was a wall telephone and ever since 1900 the Post Office has given an applicant the choice between a wall and a table instrument. With the introduction of the handset table telephone of 1936, however, the need for table and wall varieties of the same basic telephone ceased, as this could be fixed on a bracket to form a satisfactory wall telephone when required.

Pre-war Designs

In 1938 a further type of handset table telephone, the familiar 300 type combined set, was put into service. This had space for fitting keys for auxiliary purposes, for extension plans and the like, but it was too long to be mounted on a bracket and used as a wall telephone. A logical further step would have been a wall telephone giving the same facilities; this project was, however, overtaken by the war and only recently has it been possible to fill this gap in the Post Office range.

When peace did come the time was not propitious for going ahead with new designs. Capital for investment in telephones was scarce and demand was great, so the obvious policy was to make do with the pre-war designs for which all the manufacturing tools existed. A conflicting factor, however, was the rapid growth of "2-Party Line" working, re-christened "Shared Service", which enabled use of the limited line plant available to the best advantage.

The type of shared service finally standardized for automatic exchanges required calling subscribers to press a call exchange key, so that the exchange apparatus could tell which of the two subscribers was using it, and could register the call on the right meter. The key was easily accommodated in the table telephones but the lack of a wall telephone in which keys could be mounted was emphasized.

An interim type of wall telephone, designed to fill the shared service requirement only, was therefore introduced in 1948. This telephone, illustrated in Fig. 4, used as far as possible the same parts as the table telephones—the chassis on which most of the parts were fixed being identical. Besides the call exchange key this telephone also contained a relay and other components necessary to prevent the bell tinkling when the partner telephone dialled. This made the telephone rather bulky and, added to the rectangular styling, resulted in criticism of its appearance. In the meantime, a method of bell tinkling suppression which used a tiny thermistor in place of the relay had been developed.

(The heart of the thermistor is a bead of metal oxides which has a very high resistance at normal temperatures, but whose resistance falls to a low value when it is heated. Isolated voltage surges, which would cause irritating tinkles, are insufficient to warm up the thermistor bead and it remains a high resistance isolating the bell from the surges. Genuine ringing signals on the other hand last long enough to heat up the thermistor whose resistance falls allowing the bell to be energized.)

The Post Office decided that this development justified designing a completely new wall telephone and the Council of Industrial Design, which had criticized the interim telephone, was asked to advise on style. On the Council's advice, the Post Office commissioned a designer to produce a prototype telephone, laying down a number of conditions which the complete design had to meet The appearance of this prototype telephone, illustrated in Fig. 5, was not completely satisfactory, so current proprietary wall telephones were reviewed to see if anything better was available. A display of wall telephones, including the newly designed prototype, was held; a "mock-up" of a design project by Ericsson's was included, and the Ericsson design was judged to have the best appearance. The Post Office, therefore, decided that it should be developed to give the many facilities required.

Ericsson's developed the new telephone with the collaboration of the Post Office Engineering Department; the final design is illustrated in Fig. 1. This contains the same parts as the 300 type, and gives the same facilities except that it does not include a directory tray. This could not be included without spoiling the appearance and so it was omitted. The principal parts are mounted on a die-cast base plate, as shown in Fig. 2, the telephone case being a plastic moulding fitting over the base.

Fig. 2 : The principal parts are mounted on a die-cast base plate, the case being a plastic moulding fitting over the base

Fig. 3 : The adapter, which comprises the extra key, rectifier and thermistor necessary to convert the telephone for use on automatic shared service systems

Following experience with previous telephones a number of small improvements has been made. The maintenance engineer can remove the dial without removing the case, while the case itself may be removed, revealing all the rest of the telephone, by slackening only one screw. The method of fixing the instrument to a wall is an improve-

Fig. 4 : Interim type : this used as far as possible the same parts as the table telephones

ment on previous wall telephones. It is spaced slightly from the wall by rubber bushes instead of the customary rigid ones; these give flexibility to allow for uneven wall surfaces and for deviations of the fixing screws from their true positions.

A real difficulty for the Post Office Engineering and Supplies departments is the multiplicity of types of telephones made necessary by the different kinds of service to be provided. There are, for example, eight different types of the 300 type table telephones, and with variations in exchange systems and in telephone colours there may be up to 12 stocked varieties of each type, so that the idea of a universal telephone which the installer can simply adapt to provide a number of different facilities is very attractive. This idea cannot economically be taken far, however, for it is wasteful if the price of universality is the provision in every telephone of some part which will be used only in a few.

Flexibility

With the new wall telephone an attempt has been made to provide flexibility economically. This instrument is made and stocked in three basic types only. The first is a simple telephone which gives only the essentials for an exclusive direct exchange line and does not provide for the fitting of keys or any variation. The second type is the "flexible" telephone, to which may be fitted up to three push button keys and the circuit of which may be changed by fitting add-on units within the telephone to give the same facilities as a number of differing table telephones. The third type is a telephone fitted with a trembler bell in place of the usual magneto bell.

An adapter for use within the flexible telephone is illustrated in Fig. 3. This adapter comprises the extra key, rectifier and thermistor necessary to convert the telephone for use on automatic shared service systems. The adaptor is connected in the telephone circuit by the short cord. Apart from the immediate advantages of the flexible telephone there is always the possibility that some future requirement, at present unthought of, will occur which can be met by adding a new simple adapter instead of manufacturing a new type of telephone.

Apart from the immediate advantages of the flexible telephone for adaptation to a variety of current requirements, it does make some allowance for the possibility that new developments, as yet unthought of, may occur which might be met by providing further simple adaptors, so avoiding the time and cost of designing and producing a completely new type of telephone.

Fig. 5 : Prototype : the appearance of this telephone was not completely satisfactory