arms, or canvas bands may be fastened to a strip of canvas across the bed to immobilize the subject. Adults may wear thin cotton gloves and keep their nails very short, or their wrists may be tethered to the pyjama girdle. It is obviously impossible to clear up a lesion of the skin if it is actively scratched. The intelligent patient who can refrain from scratching while fully awake may be found to scratch violently during sleep, and will often admit to finding the lesions bleeding and excoriated on waking in the morning.

Occlusive dressings over tar or zinc paste are effective partly because of their barrier to scratch injury, and the old technique of painting the irritable area with crude coal tar was effective for the same reason. A 10% solution of crude coal tar in acetone is somewhat more elegant than plain tar. Of the proprietary preparations "tar dermament," which contains a varnish basis, is sometimes very useful. When the tarry film is tacky it may be reinforced by the application of a talcum powder, and "Fissan ichthyol powder" is usually well tolerated by the eczematous skin. "Dermatol" (bismuth subgallate) has a reputation for its astringent and sedative properties. Another protective preparation is 10% ichthammol in flexile collodion.

Psychological Considerations

No discussion of modern treatment is complete without a consideration of the patient's psychological reaction to his illness and of measures to diminish his anxiety and foresight in preparing him for his return to useful work.

Young patients should be provided with a variety of toys, and in severe cases of eczema they are undoubtedly better if nursed in a ward where they have playmates. Children unhappy and fretful with restraint in their cots, doing their best to scratch or rub, are often seen to play happily without obvious discomfort from their eczema when allowed to be up.

Occupational therapy cannot be introduced too early in the treatment of adults with eczema, and if interesting handicraft can be provided it is often possible to dispense with sedatives during the daytime. In milder cases of eczema it is advantageous for the patient to continue at work, provided that further contact with irritants is avoided, and the co-operation of the employer should, if possible, be obtained to secure this. If alternative clean light work cannot be found it would be better for the subject to seek some other job. Many patients with intractable chronic eczema get a fixed anxiety neurosis, and the patient's sole interest is his skin. In this phase the prognosis is almost hopeless, and it is believed that the tragedy and economic wastage can usually be averted by giving as much thought to the maintenance of the subject's morale and confidence in his or her ability to return to full employment as to the details of local treatment.

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A six-months course for training men and women who wish to take posts of responsibility in Old People's Homes will be held in September by the National Old People's Welfare Committee and the National Corporation for the Care of Old People. Students will be given lectures on institutional management, first aid, and home nursing, and practical training in a hospital geriatric unit and in an old people's home. Inquiries about the course should be addressed to the secretary, National Old People's Welfare Committee, 26, Bedford Square, London, W.C.1.

THE DEVELOPMENT OF THE ELECTROCARDIOGRAPH IN GREAT BRITAIN

BY

S. L. BARRON

Electrocardiographic research may be said to have begun in the latter end of last century with the work of A. D. Waller (1890), of Bayliss and Starling, and of Gotch and Burch, who, employing a capillary electrometer, established that a form of electrical potential curve was associated with the contraction of the human heart.

Einthoven's Researches

Willem Einthoven, of Leiden University, was prompted by these researches to make similar investigations, and published a paper in 1895 describing work also using the capillary electrometer. Realizing the limitation of this method, he devised a more simple, sensitive, and accurate means of recording these fluctuating electrical potentials. The instrument we know as the "string" galvanometer had been known in theory for some years, and had been applied and described by Ader in 1897 for investigations in cable telegraphy. It consisted of a single metal fibre stretched in a magnetic field, and was intended as a quick-period system rather than a sensitive one. Ewing in 1892 described a bifilar galvanometer containing two conductive fibres bridged across the centre by a small mirror and the whole inserted in a strong magnetic field. This was used for tracing magnetization curves and escaped notice as a reflecting mirror galvanometer. As both these papers were out of Einthoven's field he was unaware of them when he began to develop the string galvanometer.

The problem that confronted Einthoven was to make an instrument of high internal resistance, dead beat, with quick period, highly sensitive, and stable for accurate calibration. As sensitivity is normally obtained at a sacrifice of period and stability it was at that time a great problem. He experimented first with a highly sensitive D'Arsonval moving-coil galvanometer and found that the smaller the numbers of windings on the coil the greater was the normal sensitivity. This led first to a single-turn coil and then to stretching a single wire in a strong magnetic field. In order to get a high electric resistance in the wire or "string" as it became termed, he developed a method of chemically plating with silver fine quartz fibres made by the classic method devised by C. V. Boys (1887). These fibres were electrically conductive, of high resistance, and owing to their small mass had negligible moment of inertia; on them the whole of the development of electrocardiography depended, and they are still in common use to-day.

The fibres were tautly suspended between the poles of a powerful electromagnet, and the shadow of the "string" was projected by a large arc lamp through a specially designed optical system which photographed the movement of the string shadow on a moving photographic plate. The electromagnet was large and unwieldy, and was cooled by a water-jacket (see Fig. 1).

In 1903 Einthoven described his equipment in a historic paper, "Ein neues Galvanometer," quickly followed by a paper (Einthoven, 1904) which compared the earlier work of Waller, using a capillary electrometer, with the new string galvanometer, and established the latter as highly accurate and suitable for electrocardiographic work.

Einthoven (1908) followed by a long and painstaking research in which he established the forms of connexion to

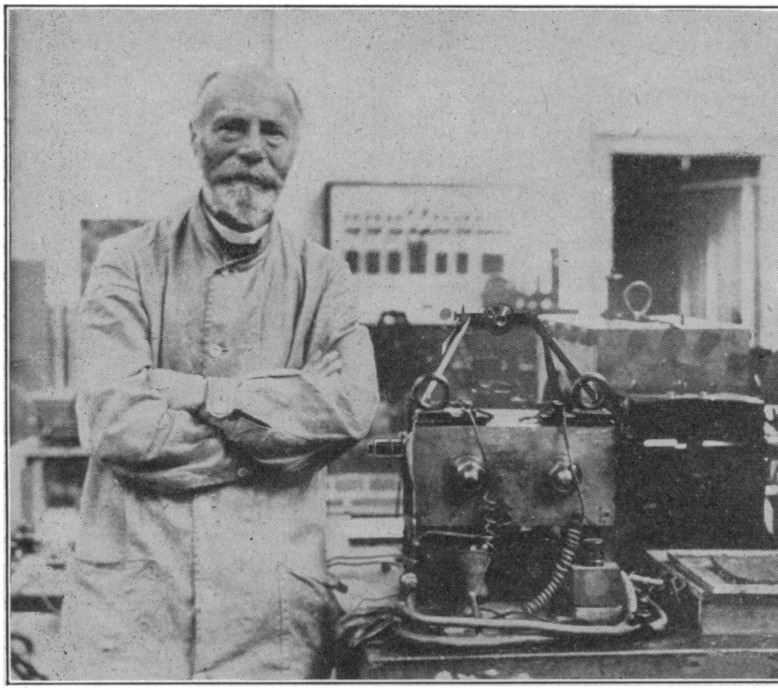

FIG. 1.—Professor W. Einthoven in his laboratory at Leiden with the original "string" galvanometer.

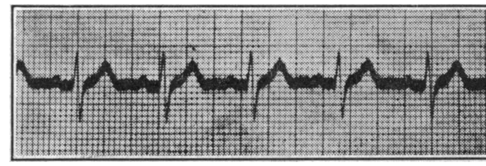

FIG. 2.—Copy of an early record by Einthoven about 1903–4.

the patient, details of the electrodes to be employed, the sensitivity standards, and the interpretation of the more general changes in heart rhythm as manifested in the electrocardiogram (see Fig. 2). Thus was established the Einthoven convention and the three-lead electrocardiogram that is still in common use.

The interest of physiologists all over the world was greatly stimulated. Many desired to procure apparatus of similar kind. Einthoven approached Mr. Horace Darwin (the youngest son of the great biologist, and founder of the Cambridge Scientific Instrument Company in England) to make the apparatus under a royalty agreement. An agreement was made and the company enjoyed the co-operation of Einthoven until his death.

The Cambridge Electrocardiograph

The British part in the development of electrocardiography may be said to date from this time. The Cambridge Company designed a string galvanometer and produced many features of great interest. The design was carried out by W. Duddell, F.R.S., who had acquired fame by his introduction of the Duddell oscillograph. He succeeded in reducing the size of the electromagnet by paying great attention to the shape and thus obviating magnetic leakages and concentrating the magnetic field in the "string" gap. He dispensed with the troublesome water-jacket and designed a galvanometer that, while only a fraction of the size of the Einthoven instrument, was comparable in performance. Duddell improved the "string carrier," in which he enclosed the string so that it should not be affected by draughts and convection currents. This wise precaution established the Cambridge instrument as the most stable and robust of its kind. Einthoven carefully tested and approved this new instrument and first described it in 1909.

The first complete Cambridge electrocardiograph was supplied in 1911, and it came to be catalogued in 1913. Among the first users were Drs. Thomas Lewis, Wardrop Griffiths, McIlwaine, Strickland Goodall, and Cowan. The first instrument supplied to Dr. Thomas Lewis was supplied "on hire" with the right of purchase, and was installed in a basement at University College Hospital (Fig. 3). The approval of Lewis was afterwards sought for any modifications or improvements that the Cambridge Company introduced, and slowly his laboratory acquired a large quantity of equipment. In 1930 it was discovered by accident that Lewis had never exercised his right to purchase, nor had rent for the apparatus ever been called for. At this time he had ceased to be interested in electrocardiographic studies, and the apparatus had reverted to the hospital under the control of the Medical Research Council. The amount of indebtedness over the years had soared to a very high figure, and upon the matter being rather humorously mentioned *en passant* to Lewis he insisted that the Council should make a nominal payment to the Cambridge Company, who then transferred all the apparatus to the medical school. By the outbreak of war in 1914 about twelve outfits had been supplied and were being used for routine clinical work as well as for research investigations.

Early Difficulties

It may here be opportune to describe briefly these early instruments and some of the difficulties encountered with them. The outfit was carried on a large teak table and

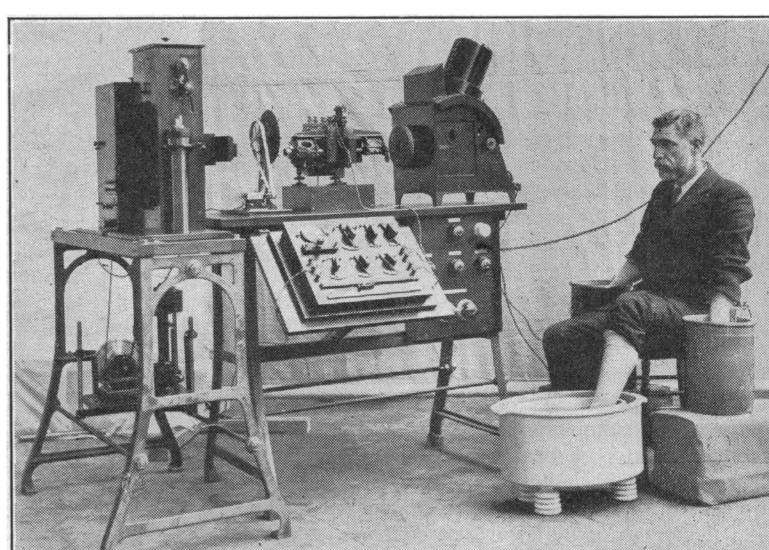

FIG. 3.—The first completed design of English electrocardiograph, 1911–12. This model was the type used by Sir Thomas Lewis (afterwards modified and added to). It may have been the actual instrument delivered to University College Hospital Medical School when he started investigations. Note the arc lamp, electrode jars, time motor, and falling plate camera.

consisted of the galvanometer, projecting lamp, camera, control board, time marker, and set of electrodes. Between the 15-ampere arc lamp and the galvanometer a water-bath was inserted to absorb the heat rays. The camera carried a falling plate controlled by a dash-pot and suspended by an ingenious but bewildering series of cords wound around rotating drums. The plate was exposed in three sections side by side and the speed of fall was adjusted by setting a micrometer screw at the top of the dash-pot. The control board contained a selector switch for the three leads, a calibrating and test position, and a compensator for nullifying the skin-current effect. The electrodes were large earthenware baths containing a zinc electrode and an inner porous porcelain pot. The inner vessel was filled with 20% salt solution and the other with saturated $ZnSO_4$ solution; connexion was made to a terminal on the zinc plate immersed in the $ZnSO_4$ solution; the limbs were immersed in the inner vessel. The time marker consisted of a vibrating tetanus spring maintained in operation by a small electromagnet. This time marker was placed in the light beam and interrupted the light each 1/50 second, and thus drew lines on the photographic plate

Of the difficulties experienced with the early outfits perhaps the most important was the temperature effect on the fibre. The powerful electromagnet and the arc lamp generated heat which communicated itself to the "string." As the coefficient of expansion of the metal mount and that of the quartz itself were greatly different the "string" became more taut as the temperature rose and the sensitivity (1 cm. for 1 millivolt) rapidly changed. It was for this reason that Einthoven introduced his heavy continuous flow water-jacket. Duddell obviated much of this effect by placing the magnet coils at the back of the heavy magnet forgings and by introducing the water-bath. Unfortunately these water-baths often grew fungoid organisms and became cloudy, thus diminishing the power of the light beam. Notwithstanding, these galvanometers retained a constant sensitivity over considerable periods and were, in general, quite satisfactory for clinical work, though frequent re-standardization was necessary in prolonged experimental work.

One of the most exasperating troubles was due to the disappearance of the string image in the optical field. When it is realized how short is the focus of the objectives and how fine the string (0.003 mm.) it is not difficult to imagine how slight an alteration of the focusing could make the image disappear. There also existed an adjustment to displace the string in relation to the optical system which was held in position by a compression spring, slight changes in which would alter the position of the string sufficiently to place it entirely out of the field of view (0.1 mm.). To find the "string" again and to re-centre it was an operation that required practice and patience, and frequent were the calls to the manufacturers to travel many miles to find that the "string" had become displaced and that in an endeavour to relocate it the physician had made confusion worse confounded by disarranging almost every adjustment of which the galvanometer and optical system were capable. Experienced technicians could perform the task systematically in a matter of minutes, whilst the distracted physician often spent fruitless hours. It was a common misconception that the "strings" were very frail and liable to breakage; this was not the case, and strings are still in use that have given 20 years' service and taken many thousands of electrocardiograms. Not all strings, however, gave such excellent results, and, while they very rarely were broken, they did sometimes develop a discontinuity in the metallic covering which rendered them useless; but this was usually due to over-slackening on the part of the operator or to dust particles fouling the string and rubbing the soft silver plating.

Alternating current was not in general use before 1920, and leakage effects from this cause, which later became very troublesome, were rarely experienced, but electrostatic charges sometimes gave trouble and in many cases the early instruments were for this reason completely enclosed in Faraday cages.

Time markers of the early tuned vibrating reeds were quickly replaced by small synchronous motors of the Raleigh type, operated by a tuning-fork which marked each 1/25 second, with a thicker line each 1/5 second. This marking has remained standard, though the time motors are now less complicated and are automatic in operation. On occasion it took literally hours to get the Raleigh motors to run satisfactorily, since they had to be started manually by spinning a wheel at exactly the synchronous speed. With practice it was a simple thing to do, but impatience or exasperation was a sure index to failure, and I remember on many occasions being called by irate physicians who had spent fruitless hours, only to arrive and give the wheel one spin to set it going merrily.

Another misconception in regard to the early instrument was that they were excessively sensitive to vibration, and almost all early instruments were installed in basements on concrete floors and in some cases on specially built foundations. I remember that Dr. Strickland Goodall specially chose his inconvenient consulting-rooms in the basement of a Harley Street house with this point in mind. That such fears were groundless was afterwards indicated by the development of trolley and portable outfits which could be transported from place to place without damage or derangement.

Work of Thomas Lewis

The progress of electrocardiography in Great Britain and indeed throughout the world during the first twenty years derived very largely from the researches of Thomas Lewis into the investigation of heart rhythms (Fig. 4). Lewis began work about 1911 in a basement at the University College Hospital Medical School. His researches were interrupted by the 1914–18 war, although his clinical experience was considerably increased during his sojourn in

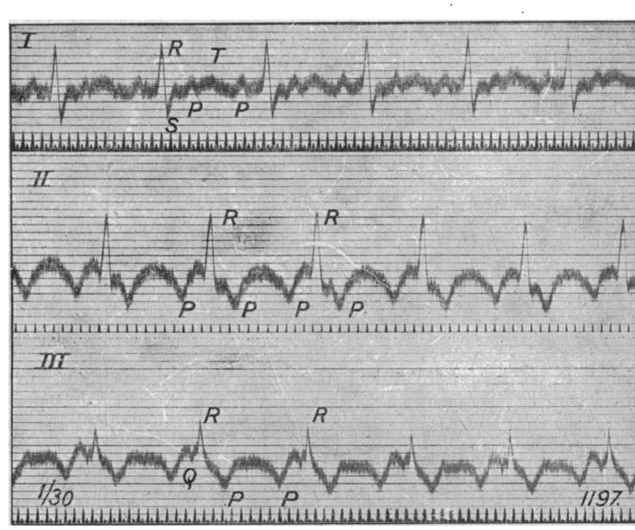

FIG. 4.—Record obtained by Lewis about 1911. The three leads in a case of auricular flutter. Auricle contracting at 320 a minute, ventricle at 160 a minute. Time marker indicates 30ths of a second (Lewis's own description).

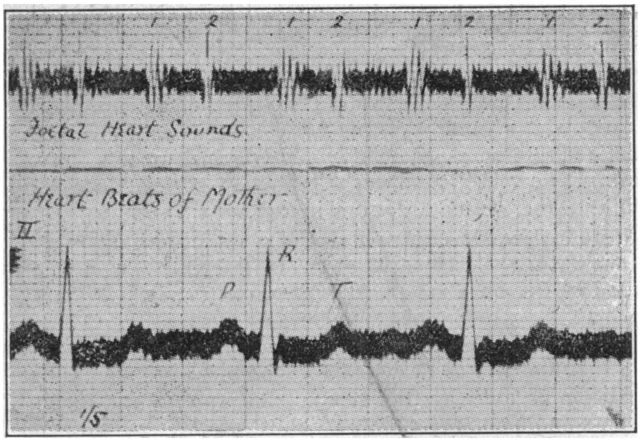

FIG. 5.—Record by Lewis, about 1913. Showing sound record of foetal heart simultaneously with the E.C.G. of mother's heart. (Note complete dissociation of time intervals.)

Colchester, where he did his notable work on effort syndrome. Lewis was a great experimenter, with a painstaking and deliberate manner. He worked on frogs, small mammals, and, in the later stages, on dogs. He devised excellent experimental electrodes consisting of glass capillary tubes half filled with kaolin paste and half with copper sulphate solution; the electrode wire was inserted in the solution and the electrode end applied to the bare tissue. These electrodes were made up in pairs, each limb of which could be separated as desired. With these he plotted the path and speed of the excitation wave induced in the heart by shocks from a Du Bois Raymond induction coil. His apparatus was enclosed in a completely blacked inner room entirely lined with galvanized netting as a protection from static charges.

In 1912 Lewis devoted some attention to recording heart sounds, although work had already been done by Stein (in 1879), Einthoven, Salomonson, and others. For taking simultaneous electrocardiograms and heart sounds the Cambridge Company designed for Lewis a double string carrier and a heart-sounds equipment consisting of a carbon granule microphone attached to a stethoscope and connected through a transformer to the galvanometer. The technique of this arrangement was somewhat difficult, but Lewis produced a series of beautiful records, one of the most remarkable of which was a sound record of foetal heart beats with the simultaneous electrocardiogram of the mother (Fig. 5). Later he caused a left-handed galvanometer to be made that could stand side by side with the right-handed model, and was thus able to take any combination of four records simultaneously. To these he added shadow tracings of venous pulse and respiration movements by means of a Franck capsule or Marey tambour carrying a lightweight lever that was made to move in the illuminated beam and thus cast a shadow within the camera aperture. The technique of controlling six operations at once was one of considerable skill, and I have acute recollections of the tension when such work was in progress.

Lewis had a passion for simple and straightforward explanations, a characteristic so well exemplified in the great clarity of his published work, his use of simple English, his regard for accuracy, and a dislike of ambiguous technical terms. He was created a Fellow of the Royal Society in 1918 and knighted in 1921 as a recognition of his great work. His first important publication *Clinical Electrocardiography*, and later his *The Mechanism and Graphic Registration of the Heart Beat*, were the most significant books of his time on clinical cardiography.

At the close of the 1914–18 war the electrocardiograph became fully established as a clinical instrument for hospital and consultative work. Among the early users in this country were John Parkinson (afterwards Sir John), John Hay, Arnold Scott (afterwards Sir Arnold), Frederick Price, Strickland Goodall, Philip Hamill, to mention but a few. The apparatus was changed in few respects, the arc lamp being replaced by a "point-o-lite" lamp, thus dispensing with the water-bath; and the galvanometer was reduced in size, as were the annoying electrode baths, the design of which, however, remained the same until 1926, although there had been frequent attempts at simplification. At this date I introduced a copper mesh strap enclosed in a saturated flannel jacket. Simultaneously, in America, Dr. Cohn introduced a metal foil "strap-on" electrode attached to rubber straps (Fig. 6). These were afterwards replaced by the direct-contact plate electrode introduced by the Cambridge organization and made possible by the production of special slightly abrasive electrode jelly. These electrodes are now in universal use and the bath electrodes have entirely disappeared.

A Change in Design

The first radical change to take place in the design of cardiographs was the introduction of mobile instruments. Before 1920 the outfit could not be moved from place to place. The need for examination in wards of patients who could not conveniently be moved was widely felt, and in many large hospitals long connecting wires were run from the medical wards to the instrument. This involved telephone connexions between the nurse and the operator, and was always inconvenient and troublesome. The most interesting installation of this type was made in 1916, when an instrument in the Pathological Laboratories at Cambridge was connected to Addenbrooke's Hospital, about a mile away, the connecting leads being carried on Post Office telegraph poles. The growing use of alternating-current supply and the increasing difficulty of alternating-current interference over long connecting cables ultimately rendered this method unworkable.

The mobile outfits were essentially the same as the earlier outfits except that a filament lamp replaced the point-o-lite

FIG. 6.—Mobile E.C.G. showing use of strap-on plate electrodes. The arc lamp is here replaced by a filament lamp.

and an operating 12-volt battery was carried beneath the table, which was mounted on castored wheels.

About 1928 the demand for a truly transportable instrument for consultation work became insistent, and it was largely due to the late Sir Maurice Cassidy and Dr. Donald Hall that a suitable apparatus was constructed. This became possible owing to the introduction of new magnet steels of high magnetic quality which enabled galvanometers to be made with permanent magnets at a fraction of the weight and size of the early models. The camera was radically redesigned and film wrapped around a drum replaced the falling plate, while a portable daylight-developing tank enabled films to be processed in the patient's home. These outfits weighed about 80 lb. (36 kg.) complete, and were a great success. For consulting-room work or for hospitals they could be placed on a small trolley and thus filled all the requirements of a clinical instrument. Thus the large table models became obsolete.

Despite this great change in form the instrument was still considered too bulky as a truly portable outfit, and further radical alterations to design took place. In 1936 a portable instrument contained in a suitcase was developed weighing about 30 lb. (13.6 kg.). These instruments maintain the characteristics of the early Einthoven instrument but are easier to operate and have devices that have eliminated most of the difficulties earlier referred to (Fig. 7).

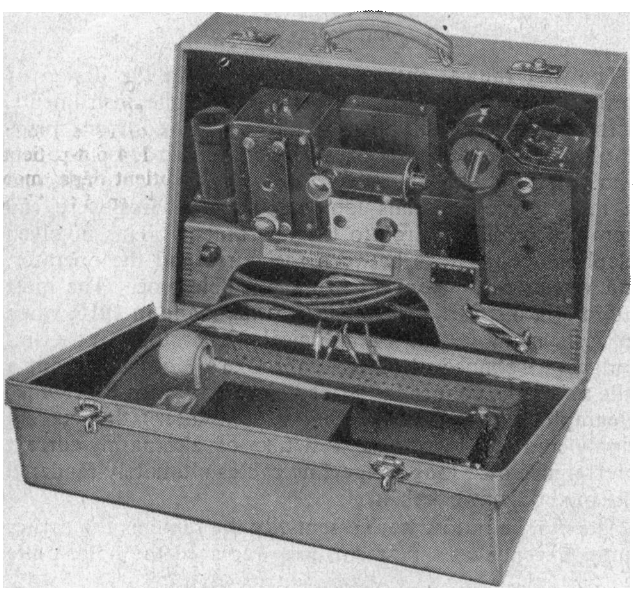

FIG. 7.—Portable cardiograph, suitcase model. Now in use for consulting work.

From an instrument weighing 6 cwt. (305 kg.) to one of 30 lb. is no mean achievement, albeit it took over 30 years to accomplish. In the meantime sweeping changes had taken place by the introduction of cardiographs that dispensed with the Einthoven galvanometer and employed a system of valve amplification operating either an oscillograph system or forming an image on a cathode-ray screen that could be photographed. One advantage of the valve instrument was that it was not greatly affected by high electrode resistance and would therefore permit less careful attachment of the electrodes. In the case of the cathode screen instrument the cardiogram appeared on the screen before and during exposure, thus making possible a preliminary examination before photographing. This advantage was more apparent than real, as a proper cardiographic analysis can be made only by careful measurement of the characteristics of the finished record, and reliance on a fleeting visual image could well lead to a faulty snap diagnosis. In general it was felt that these valve instruments broke no new ground and often introduced a new set of difficulties. The Einthoven outfit remains the standard against which other systems are checked and to which ultimate reference is made. Valve instruments have, however, now improved considerably in performance and stability, and many are now in use.

More recent development is in a direct-writing model in which the electrocardiogram is traced by a pen or heated stylus on a chemically prepared paper. Probably the first pen writing instrument was developed in 1929 by Dr. Bryan Matthews, working at Cambridge University. The instrument was designed for nerve investigations, but the inventor realized that it could be applied for cardiography, and a commercially made instrument was marketed but had little success. The advantages of such a clinical instrument are indisputable, and it is a fair conjecture that the tendency will be increasingly in this direction; but reliability, stability of calibration, and elimination of frictional errors will have to be proved to exacting standards. When this is fully accomplished the Einthoven instrument may well pass away as a clinical outfit, although there is little doubt it will remain for research work and provide the ultimate reference instrument against which others will be proved.

Developments in Medical Use

It would not be fitting to conclude this review without reference to some of the developments on the medical side that have caused changes in technique and design. Little fundamental change took place until 1934, when the direct-contact plate electrode was introduced. This had results out of proportion to the convenience that it conferred on the user, as it opened the way to the regular employment of electrodes placed direct on the chest wall. The possibility of making cardiograms from chest connexions had been known since 1877, when Waller published work of this character; he was followed by Bayliss and Starling, and by Einthoven himself. In 1930 Lewis and Drury published work in which they used a disk electrode placed on the chest wall in conjunction with one of the limb electrodes. This resulted in a new lead called Lead IV, and manufacturers made provision for it in their outfits. Later Wilson *et al.* (1934) and Goldberger (1942), in America, standardized still further lead connexions, denominated V1, V2, V3, and aVr, aVl, aVf respectively, which have now largely replaced the Lead IV. These new connexions made even greater departures from the Einthoven convention, but have greatly increased the usefulness of the electrocardiograph. Provision for taking ten lead electrocardiograms, in sequence, is now made by manufacturers by the design of what is known as a "unipolar lead switch." In some of the latest instruments this switch is incorporated on the control panel.

Considerable work has been done in relation to records obtained after graded exercise; this has made a continuous record desirable, and the short film record of the three leads taken side by side is now being rapidly replaced by a continuous photographic paper record.

Progress has also been made in the recording of heart sounds. Improved microphones and recording attachments have greatly improved the type of record that can be obtained, and many manufacturers can now supply attachments to their instruments for this work.

Possibly no twentieth-century medico-scientific invention has had more far-reaching results than the cardiograph or has become more universally used in hospitals and by cardiologists. It has been the product of close co-operation between the medical scientists and the manufacturers: hardly has a need been expressed than it has found its response in a piece of practical equipment. In all the years it has been a happy and productive association. Great Britain may well be proud of the part it has played in this great work. The name of Lewis will be honoured among cardiologists to the end of time, and British-made cardiographs are to be found in hospitals all over the world. Willem Einthoven, who made this great advance possible, received the Nobel Prize in 1924 as a fitting recognition of his great contribution to the progress of cardiological knowledge ; it is an interesting commentary that the subject of graphic recording of the heart action as he conceived it almost fifty years ago has stood the test of time, and although much new knowledge has been elicited by his methods his original nomenclature is still employed.

[This article is a condensed version of a full history of the development of the electrocardiograph which it is understood is to be published as a monograph by the Cambridge Instrument Company, Ltd., which has played a major part in the early design and development of electrocardiographic equipment.]

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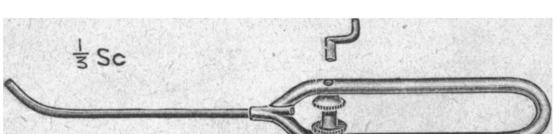
Preparations and Appliances

LIGATURE PASSER

Mr. RANDLE LUNT, M.Ch.Orth., surgeon superintendent, Bretby Hall Orthopaedic Hospital, writes: The instrument depicted here was designed to facilitate ligation of vessels when using the non-touch technique, particularly about the bottom of a deep wound. The ligature material is carried on the bobbin set in the handle and passes down the hollow stem of the instrument. A short length is allowed to protrude and is readily passed behind or underneath the Spencer Wells forceps on the vessel. It is grasped with forceps and a suitable length withdrawn by allowing the bobbin to rotate. When this length is adequate the bobbin is stopped by gripping the spring handle



more firmly, and thus a short length of material can be closely controlled in the depth of the wound. The knot is tied in the ordinary way, the ligature-carrier taking the part of one of the pairs of forceps.

The instrument is made of stainless steel by Messrs. Down Bros., to whom I am indebted for help in regard to the design and manufacture of the instrument and for the illustration. It is wise to have several bobbins, so that wire, gut, or silk may be readily available.

The first N.A.P.T. Scottish Scholarship, which is open to women registered nurses in Scottish hospitals, has been awarded to Miss I. O. Mackay, of the County Hospital, Invergordon. Miss Mackay will spend three months studying in Scandinavia.

CITY OF LONDON MATERNITY HOSPITAL

BICENTENARY CELEBRATIONS

The City of London Maternity Hospital is the third oldest institution of its kind in the country. It had its origin in the Black Swan tavern, Bartholomew Lane. There, on March 30, 1750, ten benevolent gentlemen met to found a lying-in hospital for married women in the City of London, and also "for sick and lame out-patients." A few weeks later an apartment in London House, Aldersgate Street, was converted for this purpose.

The earliest members of the staff included Herman Heineken, as physician and man-midwife, Richard Brocklesby, physician and man-midwife, and Richard Ball, surgeon and accoucheur. Heineken was physician to the Middlesex Hospital from August, 1749, to April 3, 1750, and his resignation from that appointment may have been connected with his attachment to the City of London Hospital. Brocklesby, who remained at the hospital for only one year, is much better known ; he studied at Leiden under Albinus and qualified there in 1745. He became a fellow of the College of Physicians, and delivered the Harveian Oration and the Goulstonian and Croonian lectures. He served as physician to the Army during the Seven Years' War. Brocklesby was on terms of intimacy with such men as Sir Joshua Reynolds, John Wilkes, and Edmund Burke, and he was the physician and friend of Samuel Johnson. His nephew, the celebrated Thomas Young, benefited considerably from his will, and Thomas Coram, who had impoverished himself by his generosity in creating the Foundling Hospital, was supported with a subscription raised by Brocklesby.

The hospital did not long remain at London House. On January 11, 1751, arrangements were made to move to Thanet (later Shaftesbury) House, also in Aldersgate Street and opposite London House. During the first six months of its existence the hospital admitted 42 women in labour, and 134 out-patients were treated. In September, 1751, the out-patient department was discontinued and the title of the hospital shortened to "The City of London Lying-in Hospital for Married Women." In 1753 the matron's salary was £15 a year, and there were employed in addition four nurses at £8 a year each and one domestic servant at £5 10s. At this time all confinements took place in the wards ; it was not until after 1860 that separate labour wards were provided.

A third move was made in 1773 to a site on the corner of City Road and Old Street, near St. Luke's Hospital for Lunatics and the Fox and Goose ale-house, where the present building now stands. The ground was leased from its owners, the Governors of St. Bartholomew's Hospital, and the foundation stone was laid on October 10, 1770. Although the treasurer reported that he had put gold, silver, and copper coins under it, no trace of these was found when the old building was demolished in 1903. The building cost £3,000, was built principally of wood, and comprised two stories. It was planned to accommodate 42 patients in three wards. In the rear a garden measuring 40 by 140 feet testified to the suburban character of the neighbourhood at that time. The chief source of revenue, apart from regular subscriptions, was derived from an annual sermon preached at one of the City churches, followed by a festival dinner at one of the taverns. The money collected at these festivities ranged from £300 to £600 or more. This method of raising funds fell into disuse, although occasionally it was revived again ; a festival dinner in 1906 produced £2,592.

Pupil midwives were accepted as early as 1771. Board and lodging were provided, besides the usual allowances of tea and beer. The period of training at this time was about two months, extended to three months in 1780. Before 1814 a fee of 10s. 6d. per week was being charged for the board of female pupils, but in that year the fee was raised to 21s. In the early days of the hospital it was customary to remind the patients of their position as recipients of kindness. On entry they attended before the committee to be admonished as to their conduct during treatment, and on their discharge they were again reminded of the benefits conferred upon them.