

Tenor—Mr. Chas. Edwards, "Till Dawn" (Loewe).
 March—Wellington Municipal Tramways Band, "Torchlight" (May).
 God Save the King.

3YA, CHRISTCHURCH (980 KILOCYCLES)—SUNDAY, MARCH 23.

3.0 : Afternoon session gramophone recital.
 4.30 : Close down.
 5.30 : Children's song service.
 6.15 : Chimes from studio.
 6.30 : Relay of evening service from St. Paul's Presbyterian Church, Cashel Street. Preacher: Rev. W. Bower Black. Organist: Mr. Norman Williams. Choir Conductor: Mr. H. Blakeley.
 8.15 (approx.): Relay of 4YA Dunedin's programme.
 God Save the King.

4YA, DUNEDIN (650 KILOCYCLES)—SUNDAY, MARCH 23.

3.0 : Chimes. Selected gramophone items.
 4.30 : Close down.
 5.30 : Children's Song Service, conducted by Big Brother Bill.
 6.15 : Close down.
 7.15 : Relay of evening service from Salvation Army Fortress. Preacher: Capt. Chandler. Band Conductor: Mr. Millard.
 8.15 (approx.): Studio programme to be rendered by Kaitorai Band, under conductorship of Mr. T. J. Kirk-Burnand, assisted by 4YA artists.
 March—The Band "The Torchlight" (May).
 Selection—The Band, "Hanover" (arrgd. Round).
 Contralto—Miss Irene Hornblow, L.R.A.M. "Negro Spiritual," "Steal Away" (Burleigh).
 Choir with organ—Temple Church Choir, London, "Praise My Soul, the King of Heaven" (Goss) (H.M.V. B3047); "O Worship the King" (Goss) (H.M.V. B3047).
 Selection—Band, "The French Maid" (Sanderson).
 Baritone—Mr. Arthur W. Alloo, (a) "The Sun God" (James); (b) "Sacrament" (M'Dermid).
 Instrumental—Bayreuth Festival Orchestra, "Prelude to Act 3," "Seigfried" (Wagner); (a) "The Lord is My Light" (Allitsen); (b) "Fire Music-Seigfried" (Wagner).
 Soprano—Miss Rita Holmes, (a) "The Lord is My Light" (Allitsen); (b) "Give Thanks and Sing" (Warren).
 Overture—The Band, "Der Freischütz" (Weber).
 Cello—Beatrice Harrison, "Viennese Melody" (Kreisler); (b) "Largo" (Handel) (H.M.V. C1847).
 Contralto—Miss Irene Hornblow, L.R.A.M. "Deep River" (Burleigh), "Sometimes I Feel" (Burleigh).
 Concert Valse—The Band, "Sunshine and Shadow" (Kela Bela).
 Chorus—Don Cossacks, "Evening Bells" (Jaroff); "Serenade" (trdlt.)
 Baritone—Mr. Arthur W. Alloo, "On Away Awake Beloved" (Cowan).
 March—The Band, "The Emperor" (Moorhouse).
 Soprano—Miss Rita Holmes, "Wipe All Tears Away" (Blaze).
 Hymn tunes, The Band, "Hymn of Praise" (Kirk-Burnand); (b) "Radiocast" (Kirk-Burnand).
 9.30 : God Save the King.

"Bus-bar Aerial"

THOSE experimenters who are fortunate enough to have a room in which they can carry out their wireless experiments uninterrupted, are apt to use two or three sets in different parts of the room, and connect the aerial to one or the other as required. When the set is some distance from the lead-in, the trailing wire may get in the way, and prove very inconvenient. A good system in such a room is to erect a "bus-bar" aerial. This is a very simple device, consisting of

two rod or other aerial insulators, one on each side of the room, joined by a piece of bare aerial wire pulled taut. A flexible connection, soldered to this wire at one end, is taken to the aerial lead-in. A number of flexible wires are then prepared, one end of each being fitted with a spade terminal and the other with a spring clip, specimens of which can be obtained at any wireless accessory shop. The spring clips are soldered firmly to the ends of the flexible wires, and when it is desired, to connect a particular set, a lead is clipped on the bus-bar aerial, the spade end of the lead being joined to the set. The earth terminals of all sets can be kept permanently joined to the earth lead, or a bus-bar earth wire can be run along one side of the room and used in a manner similar to the bus-bar aerial. This bus-bar scheme serves to keep loose aerial wires out of the way, and adds to the efficiency of reception by preventing unwanted capacity effects, which often creep in when long trailing aerial leads are used.

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A Well-known Wireless Pioneer

Faraday—Inventor and Constructor

FEW of those listeners who speak freely to-day of the merits or demerits of .0003 or .0005 microfarad condensers, realise that they are paying an unwitting tribute to the memory of a man who has been described as one of the greatest physicists that ever lived. This may, in the light of the advancement of the knowledge of physics during the present century, appear to be a rather overwhelming claim, but it is by no means extravagant when applied to Faraday.

Science is full of romance—though it is not always apparent. A very small incident may influence the policy of a nation or the life of an individual. So it was with Faraday, whose early employment was that of a journeyman bookbinder, and it was in this vocation that he came in contact with a customer who was a member of the Royal Institution.

Faraday was not in love with trade from the ordinary point of view. It did not appeal to him; in fact, he regarded it as selfish and debasing. It is not, therefore, very surprising when this young man was given a ticket by Mr. Dance, the member referred to, for a lecture at the Royal Institution, that he decided to throw himself heart and soul into the exploration of some of the hidden mysteries of nature.

This lecture was the last of a series of four delivered by Davy, and Faraday made voluminous notes, which he afterwards copied in fair form, and sent to Davy, explaining at the same time how much he loathed the idea of trade and how he wished to desert it and follow science. This letter met with a kindly reply from Davy, but something better than this reply was to follow, for soon after a letter was brought to his house late at night by Davy's servant asking him to call at the Royal Institution for an interview. The immediate result was that he was engaged as Davy's assistant at twenty-five shillings a week. The ultimate result is the famous Davy-Faraday Laboratory of to-day.

Men of science had long believed that there was an intimate relation between magnetism and electricity, but evidence was lacking to prove this to be a fact. Faraday provided the evidence. In doing so he laid the foundation of electro-magnetism as we know it and paved the way for the dynamo, motor, induction coil, or transformer, and all the variations of these that have placed electricity at the service of mankind.

Since almost everyone who uses a valve set employs an audio-frequency transformer, it may be interesting to consider Faraday's first induction coil. It consisted of a simple iron ring, with separate windings on each semi-circle, there being no connection between the two coils. After many experiments he found that if a current was allowed to pass through one winding, and then stopped, there was a momentary difference of potential "induced" in the other at the instant of making and breaking circuit.

Call one the primary and the other the secondary, and you have the soul of the transformer as it was, is, and must remain—the most important factor in the transmission of light, heat, power and wireless.

ON August 28, 1831, Faraday made his first successful experiment in electro-magnetic induction. Later in the same year he described his discovery at a meeting of the Royal Society. This may be called the birthday of electro-magnetism. So it came about that the foundation of the whole of electrical engineering was given to the world by means of a simple paper read by a man who expressed himself always with the greatest simplicity.

The publication of Faraday's diary is, at the moment, under consideration, and it is to be hoped that it will, in due course, be available for those who desire to study seriously the development of electrical engineering. It is intended this year to hold centenary celebrations in Faraday's honour, and it is anticipated that the publication of his diary will coincide with this event.

FARADAY had many other interests in the realm of physics besides electricity. As a research chemist he did some remarkable work, discovering new carbon-chlorine combinations and succeeding in liquefying various gases. Apart from this he investigated the properties of glass, and this led him to the study of polarised light and the behaviour of a polarised ray in a magnetic field. Indeed, his researches were so extensive that they covered not only chemical, physical, and electrical matters, but included a study of ice and the movements of glaciers.

Faraday died at Hampton Court in 1867 in a house placed at his disposal by Queen Victoria. His acceptance of this residence may be attributed to a nice degree of delicatessen, for which credit has been ascribed to the Prince Consort.

It is impossible in this short article to convey more than an outline of the importance of the pioneer work—inventive and constructive—that Faraday accomplished, but it should be remembered by everyone who pushes a button, turns on the light, or switches on a wireless set, that they owe a debt to the genius of the one-time bookbinder—Michael Faraday.



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