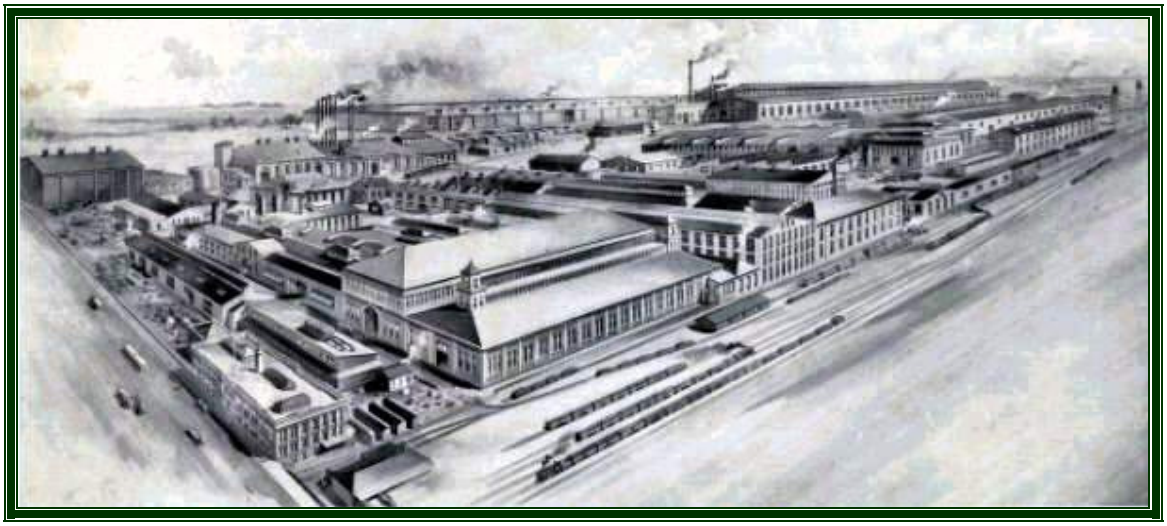
GEORGE FRICK
1826-1892

No portrait has so far been discovered



The Frick Factory, Waynesboro, PA in 1914

Frick Company

INTERIOR VIEW OF
INSTALLATION BY F

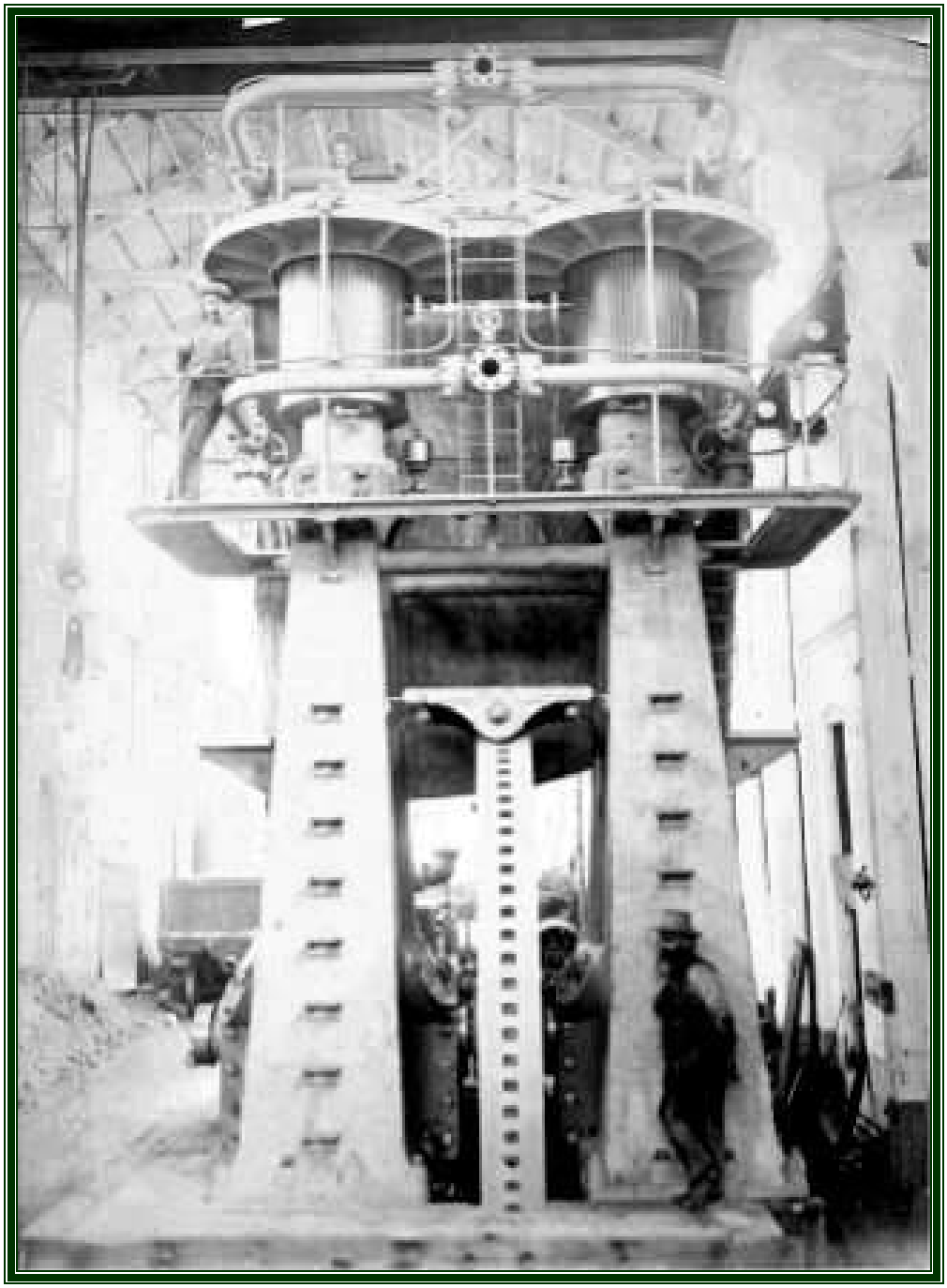
IT was in the early 50's that George Frick, a young millwright operating near Waynesboro, Pa., began building steam engines. His first engine was made largely by hand and was mounted on wooden sills. By 1856 he was producing engines, in considerable quantities. Twenty years later Frick engines, together with the various kinds of equipment they were used for driving, had gained an international reputation.

When, therefore, an engineer in the nearby city of Baltimore wanted to convert a steam engine into an ammonia compressor, it was natural for him to turn to the Frick Shops in Waynesboro. The work of designing and constructing the ammonia cylinder, piston and valves was completed in 1882.

The following year a complete two-cylinder steam driven refrigerating machine was built upon designs drawn largely by A. O. Frick, one of the sons of the founder of the firm. A wood cut made from an early photograph of this first complete Frick ammonia compressor, together with an outline of the details of the machine, was published in REFRIGERATING ENGINEERING in April, 1932. The article in that issue furthermore told how Edgar Penny came to Waynesboro from the Corliss Steam Engine Works and developed the Frick open type steam driven refrigerating machine, which remained in a sense the standard for the industry until after the opening of the World War. The article also described the largest Frick machine ever built, a gigantic tandem-compound steam engine driven compressor with ammonia cylinders measuring 27 in. dia. by 48 in. stroke, which has been in service in the Armour plant in Kansas City since 1896.

The genius of George Frick was the guiding spirit in the development of Frick Company from its establishment in 1853 until the death of the founder in 1892. In 1904, A. O. Frick became president of the company, later serving as chairman of the board. Ezra Frick was made president in 1924.

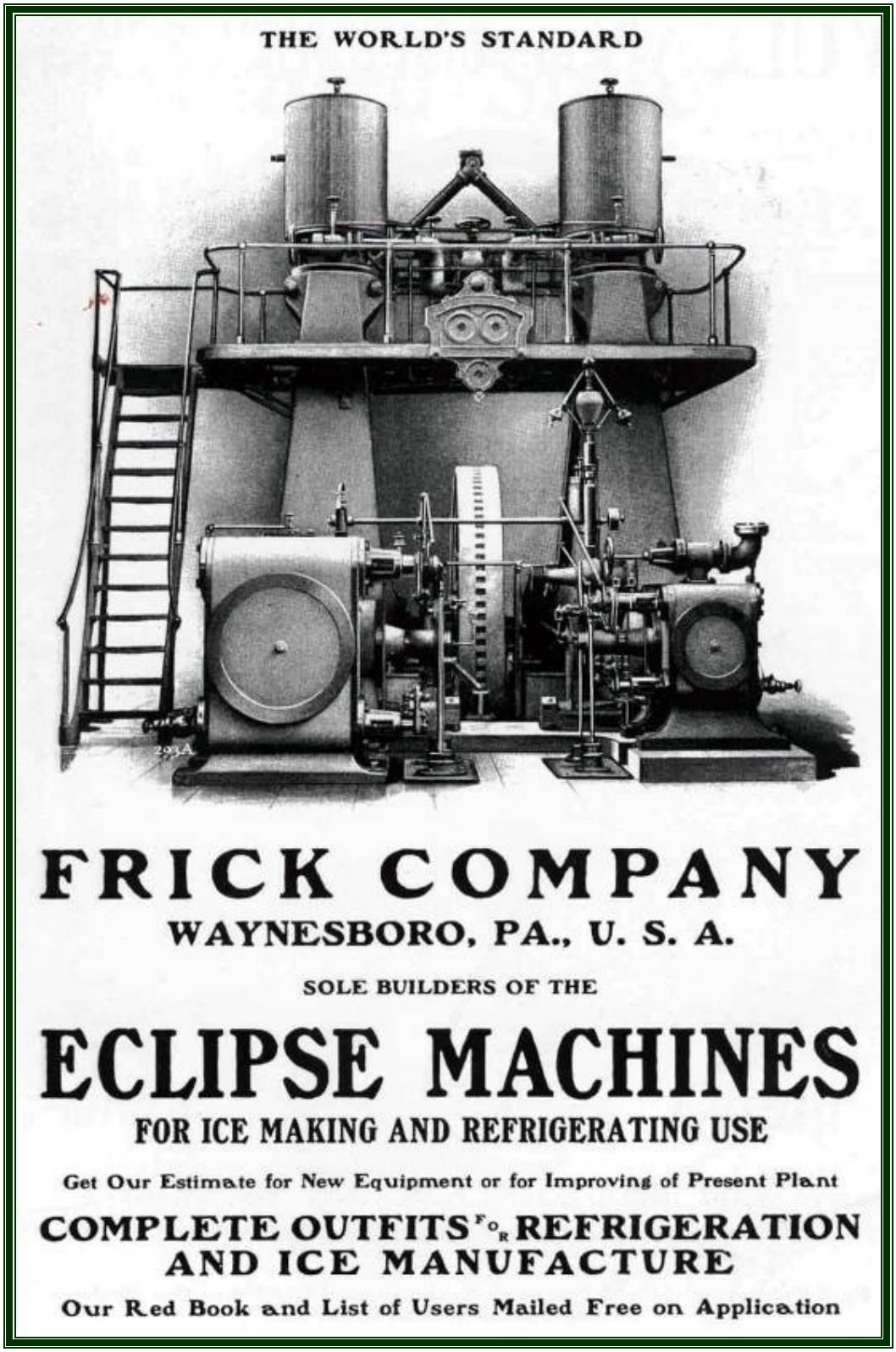
(From "What the Refrigerating Machine Companies Have Contributed," Refrigerating Engineering, December 1934)



An early, very large, Frick machine.
The size can be judged by the man standing on the left of the upper platform.

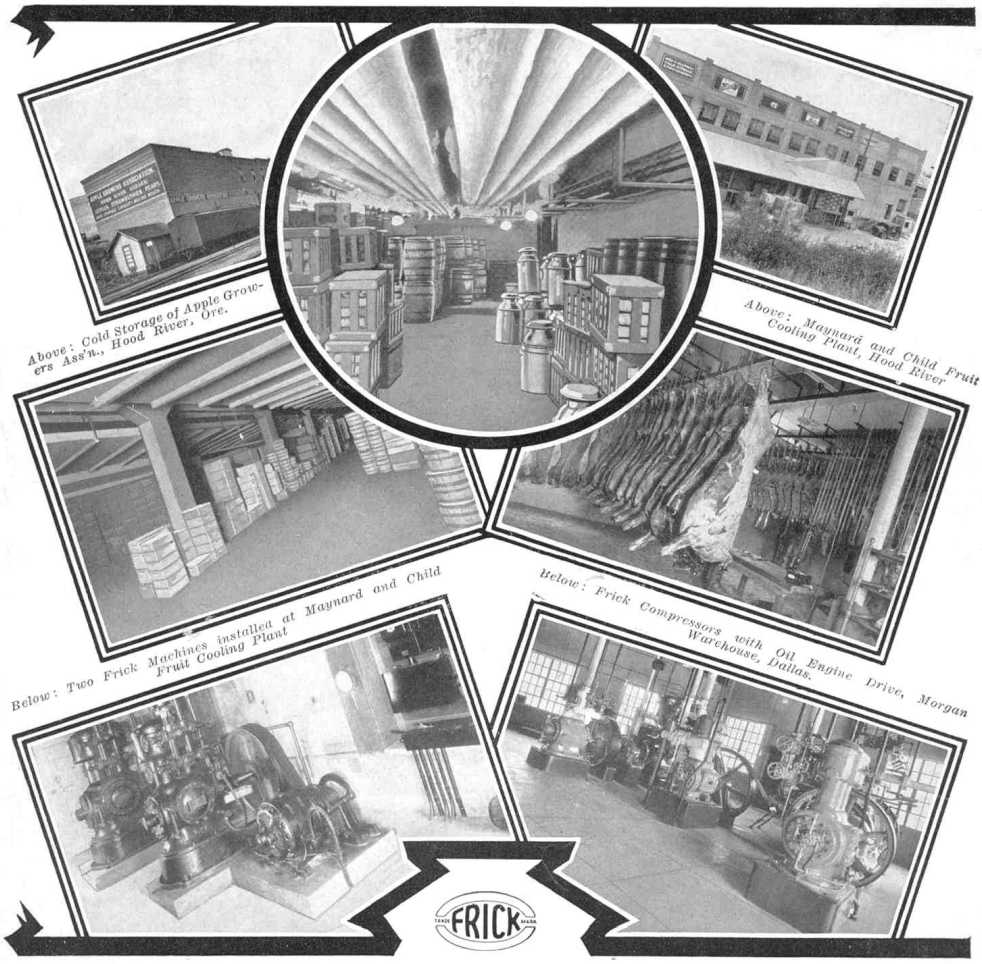
Figure 8-61 *(From* Ice and Refrigeration, *March 1893, p. 263).*

(From "Heat & Cold: Mastering the Great Indoors,"
Barry Donaldson & Bernard Nagengast, ASHRAE, 1994)



(From "Ice and Refrigeration," 1905, Commemorative Booklet, ASRE, February 2005)
(CIBSE Heritage Group Collection)

FRICK REFRIGERATION



Above: Cold Storage of Apple Growers Ass'n., Hood River, Ore.

Above: Maynard and Child Fruit Cooling Plant, Hood River

Below: Two Frick Machines installed at Maynard and Child Fruit Cooling Plant

Below: Frick Compressors with Oil Engine Drive, Morgan Warehouse, Dallas.

The continued recognition given to Frick Refrigerating Equipment by Owners and Engineers is the surest testimony of its lasting value. This holds true in cold storages as well as in ice plants, hotels and other places where first-class machinery is in demand.

Ask any engineer what he thinks of Frick compressors: consult with plant managers as to the overall results obtained with Frick cooling systems: visit some of the successful cold storages that have depended on Frick Refrigeration for generations. The facts will speak for themselves.

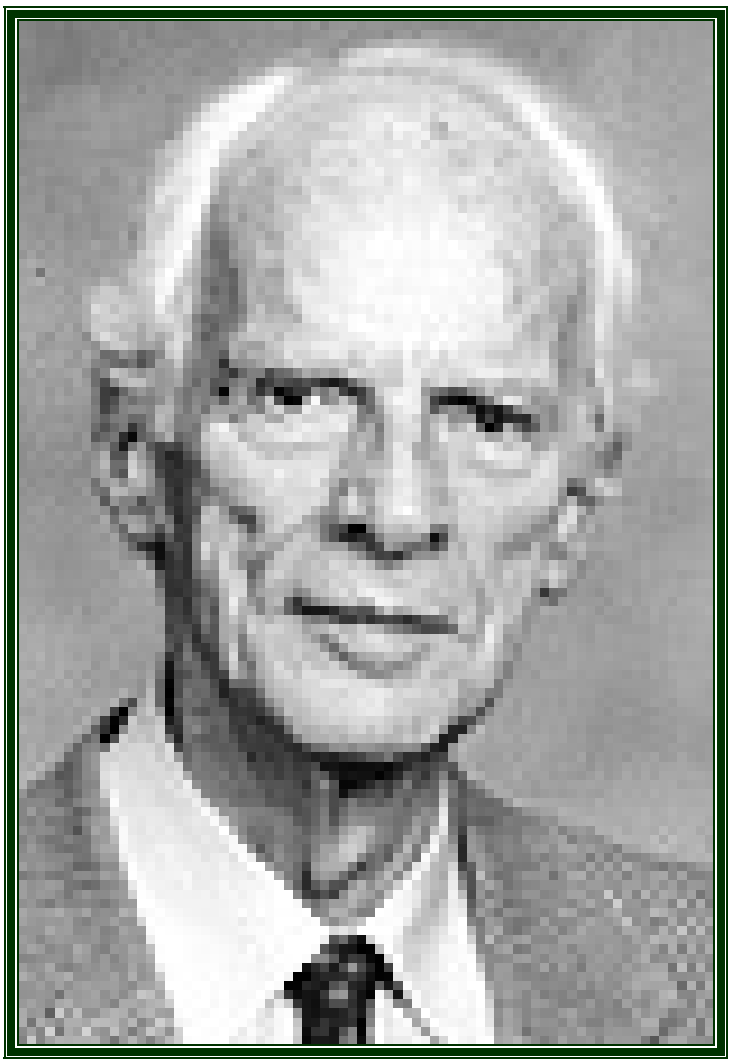
New York, N. Y.
Syracuse, N. Y.
Pittsburgh, Pa.
Cincinnati, Ohio

Frick Company
WAYNESBORO, PA., U.S.A.
ICE MACHINERY SUPERIOR SINCE 1882

Philadelphia, Pa.
Baltimore, Md.
Charlotte, N. C.

(From "Ice & Refrigeration," February 1928

A PHARO GAGGE
1908-1993



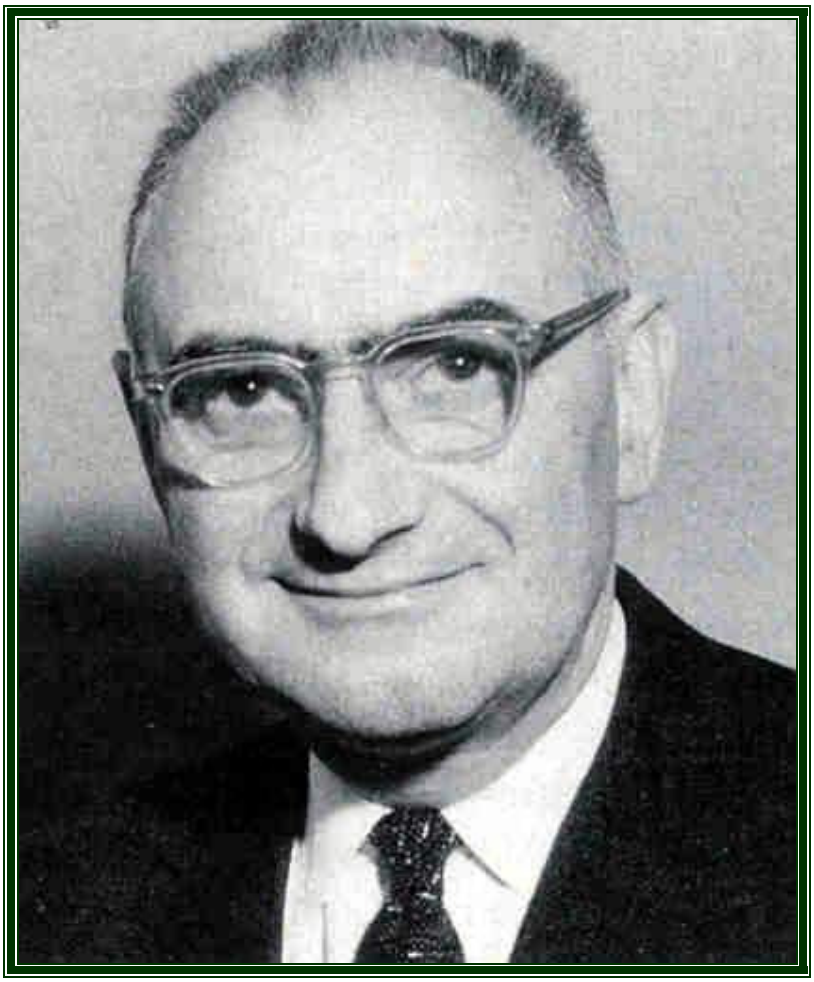
Comfort Researcher

A. PHARO GAGGE **1908 – 1993**

A Pharo Gagge received a MA from the University of Virginia in 1933 and a PhD from Yale in 1933. Dr. Gagge was a renowned biophysicist and professor emeritus of epidemiology (environmental health) at Yale University School of Medicine. Gagge's contributions to the industry and the Society included the following: "Clo" unit used to quantify clothing insulation; "operative temperature" used to combine the air and radiant temperature; and the concept of "skin wettedness" essential to understanding discomfort in heat. In addition, Dr. Gagge made major contributions in the following areas: Human heat balance and equation development, basic formula in human heat exchange; the "Two Node Model" of human temperature regulation; ASHRAE Standard 55, Thermal Environmental Conditions of Human Occupancy, 1963-1992; and human thermal comfort comprehension and the effective temperature used by ASHRAE. Gagge contributed more than 125 publications to the industry. He was elevated to the grade of ASHRAE Fellow in 1974, awarded the Distinguished Service Award in 1974, received the Louise and Bill Holladay Award in 1981, and the F Paul Anderson Award in 1986. A. Pharo Gagge was inducted into the ASHRAE Hall of Fame in 1995.

(Edited extract from ASHRAE "Hall of Fame" Citation)

HENRY L GALSON
1900-1963



Leading Pioneer of Self-contained Air Conditioning Units

[115] Henry L. GALSON **1900-1963**

Born in Austria. Qualified as mechanical engineer, Vienna. Emigrated to USA (1922). Worked in Philadelphia. Filed patent for an improved dryer air circulation system (1924). Joined (1925) Bentz Engineering Corp., an air conditioning manufacturer in Newark, then Cooling & Air Conditioning Corp. in New York (1926). Became Chief Engineer at Philadelphia Drying Machine Co. (1928). After the Depression, joined De La Vergne (1932) and designed a compact self-contained air-conditioning unit. Then added reverse-cycle (1933), said to be the first hermetic with this feature. Grant [106] later wrote, "This console room air conditioner was 20 years ahead of its time." Next, Galson worked on the design of railway sleeping coach air conditioners. His many patents were sold (1937) to a consortium: GEC, Westinghouse, Frigidaire, Carrier, and Sturtevant. Galson then worked for Carrier designing unit air conditioners. During World War II, he improved the British *Hedgehog* anti-submarine weapon. Went on to develop a rotary latent heat exchanger before being made redundant. Set up (1946) as a consulting engineer, specializing in the design of air-conditioning units. Worked for many well-known manufacturers. Later (1952-1953), the top U.S. manufacturers were first, Fedders (200,000 units); second, Mitchell (nearly 200,000); and fourth, Carrier (115,000). Thus, at that moment, some 42% of all unit air conditioners sales could be linked to Galson.

(Mini-biography from "The Comfort Makers," Brian Roberts, ASHRAE, 2000)

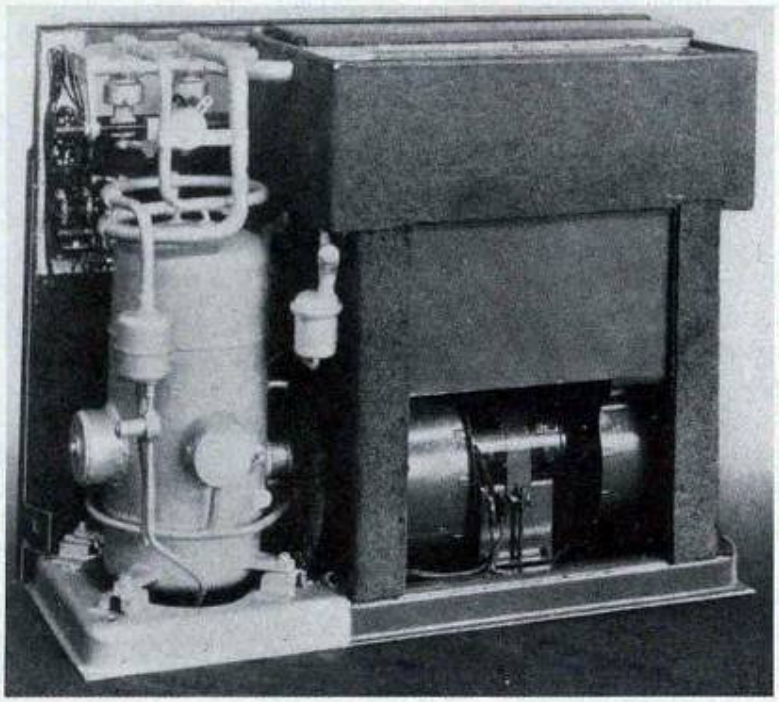


Figure 1. De La Vergne air conditioner.

Henry L. Galson: Pioneer Designer of Self-Contained Air-Conditioning Equipment

Galson's wide range of designs included window air conditioners, refrigerated food dispensers and packaged air conditioners

By Edgar L. Galson, P.E.; and Allen E. Galson, P.E.
Fellow ASHRAE *Member ASHRAE*

Henry Galson was born in 1900 and raised in Vienna, Austria. His father, Leopold Galitzenstein, a lawyer, died when Galson was five. To support the family, his mother turned her elegant family home into a boarding house for American physicians who were attracted to the intellectual ferment and medical advances that characterized turn-of-the-century Vienna.[1]

At age 17, shortly before World War I ended, Galson was drafted into the Austrian army. Appointed a commissioned officer after six weeks of training, he was immediately sent to the Russian front with orders to escort back a company of Russian prisoners. After Galson accomplished this solo mission, he was posted to the Italian front. Fortunately, the war ended before he saw action.

Galson attended the Vienna Technische Hochschule and graduated as a mechanical engineer at age 22. Austria was then rocked by hyperinflation; money lost substantial value from day to day, and a prudent person promptly spent whatever he possessed. Galson's first job as an engineer was in a bread factory, where he became keenly aware that a suitcase full of money could be inadequate for the purchase of a loaf of bread.

Henry L. Galson

His disgust with the economic and social situation caused him to consider leaving his job and Europe. With a knowledge of English and the United States derived from his exposure to the American physicians living in his house, Galson accepted the invitation of one of them to sponsor his immigration to the United States.

In 1922, he came by ship to Ellis Island. As was the style back then, he anglicized his name to Galson while being processed through immigration.

The young engineer

Galson soon found employment as a project engineer at Procter and Schwartz in Philadelphia, at $25 per week. He was responsible for the preliminary engineering and testing of industrial drying and processing equipment, the customized product line manufactured by the company. He also enrolled in a graduate course in business administration at Temple University.

In 1924, Galson filed for his first patent for an improved dryer air circulation system. Most important, he met and married Gertrude Malligson, whose home was Insterburg, East Prussia, and who was working in Philadelphia. And so, in two short years, Galson found his profession, his country and his wife, and he began to make his mark as an inventor.

Technology for a Better Environment
ASHRAE
Centennial
1894-95 ~ 1994-95

Soon after, with a child on the way, Galson looked for more remunerative employment. In 1925, he joined the Bentz Engineering Corporation in Newark, New Jersey, an air-conditioning manufacturer. There he was placed in charge of the industrial drying department at the princely salary of $50 per week. He engaged in development, design and application engineering of drying and air-conditioning equipment.

In 1926, Galson left Bentz for a better job with Cooling and Air Conditioning

About the authors

Edgar L. Galson is a member of the board of directors of Galson Corp., East Syracuse, New York. He received his BS degree in mechanical engineering from Cornell University and his masters degree in mechanical engineering from Purdue University. Galson is chairman of ASHRAE SPC 110 (Method of Testing Performance of Laboratory Fume Hoods), a member of TC 9.10 (Laboratory Systems) and a corresponding member of TC 5.8 (Industrial Ventilation).

Allen E. Galson is the chairman of the board of Galson Corp. He received his bachelor's degree in mechanical engineering from Cornell University. Galson is a certified industrial hygienist and a member of AIHA, AWMA and ANS.

(Extracts from ASHRAE Journal, April 1995)

Corporation of New York. There, he was an application engineer responsible for the design of industrial air-conditioning systems.

In 1928, he became chief engineer of the Philadelphia Drying Machinery Company, at a weekly salary of $77. He was in charge of the engineering department and responsible for the design of industrial processing and drying machinery, conveyors, vacuum extractors, carbonizing equipment and fans. It was a fantastic job for a 28-year-old engineer, but three years later, the company and its memorable tradename *Hurricane* fell victim to the Great Depression.

In a burst of creativity shortly before the company failed, Galson filed for five patents in nine months. Like his first patent, these were for drying equipment of improved performance: better air circulation, enhanced extraction efficiency, lower equipment stresses and improved product support.

Galson was out of work as an engineer for almost a year. During this time, he put food on the table by selling nylon stockings to retail outlets. He was able to parlay his old-world charm, good looks, youthful optimism and driving will into success as a salesman; his commissions peaked at $5 per week. Not surprisingly, he could not return to engineering soon enough.

In late March 1932, De La Vergne placed advertisements for engineers having knowledge of air conditioning. From 150 responses, Galson and Hans Steinfeld were selected, and they reported for work in early April. Within the month, Galson designed the basic configuration of a compact, self-contained, air-cooled air conditioner.

Seven months later, a unit had been built for testing and development[4] and Galson filed the basic patent for what later became known as the De La Vergne unit (see *Figure 1*). The unit became commercially available in 1933 with reverse cycle capability as an added fillip.

Although Galson's name alone appears on the basic patent, important contributions were made by Neeson, Ray Heller and Steinfeld. Along with Galson, they were joint recipients of the prestigious John Scott Medal, which was awarded by the City of Philadelphia for the "most meritorious devices for the improvement of the health and comfort of the human race."[8]

In 1937, its basic air-conditioning patents were sold for an undisclosed sum to a consortium of five companies: General Electric, Westinghouse, Frigidaire, Carrier and Sturtevant.[10, 11] The De La Vergne air-conditioning department was disbanded, and Galson and the others were dismissed.

The Carrier years

Galson quickly found a job with Carrier Corporation, which was then relocating from Newark, New Jersey, to Syracuse, New York. He was a project supervisor responsible for product design of self-contained room coolers, industrial air conditioners, unit heaters and refrigeration component parts for quantity production.

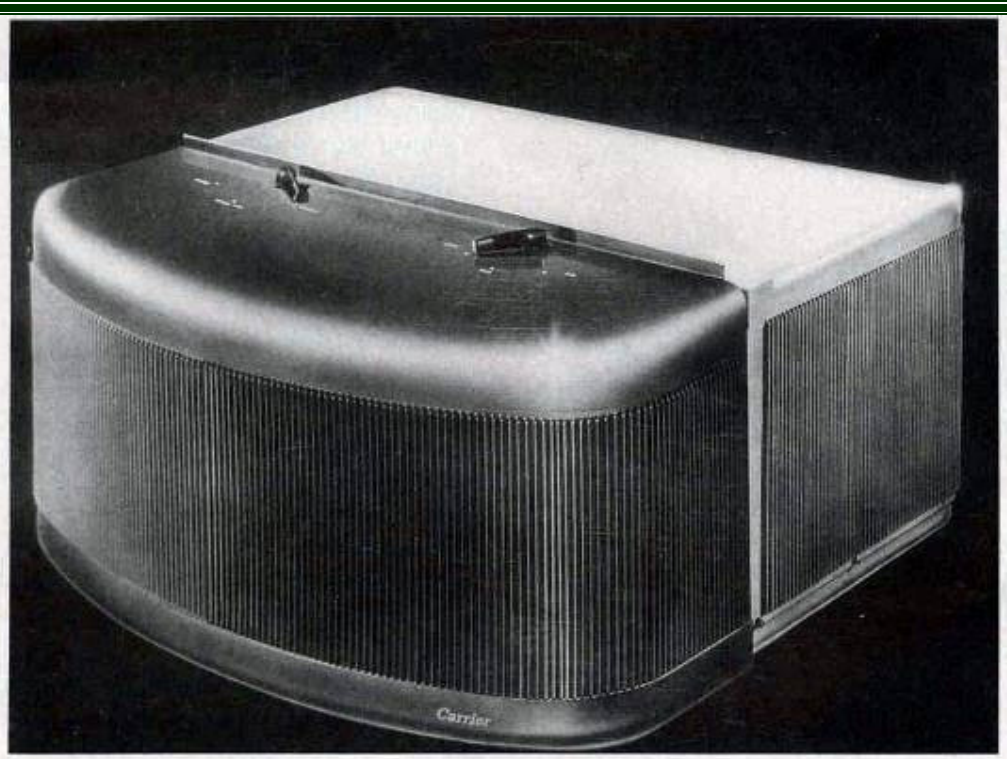


Figure 3. The first postwar window air conditioner designed by Galson.

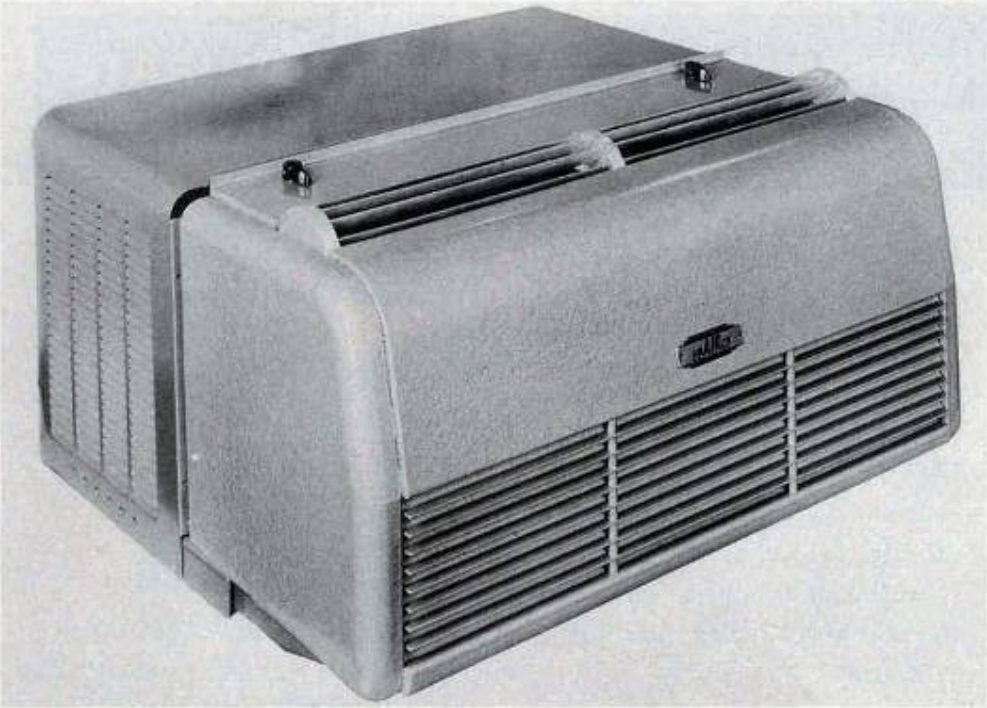


Figure 4. Window air conditioner for US Air Conditioning Corporation.

In 1942, Galson also was placed in charge of design for production of the Mark 10, an anti-submarine weapon invented by the British. The weapon, dubbed the Hedgehog, fired 24 projectiles in a fixed pattern, circular with the Mark 10 and buckshot for the later Mark 11.

Galson founded a consulting firm bearing his name in 1946. He believed that he could successfully sell his expertise in the design of self-contained air-conditioning equipment to manufacturing firms that were eager to participate in that rapidly expanding market.

The development of packaged air conditioners rested on the creative talent of many scientists, engineers and technicians, and the financial resources and management of many companies. Certainly, one noteworthy pioneer was Henry L. Galson.

As Morgan noted, the conceptualization of the De La Vergne unit was visionary. Galson's patents were significant, and units of his design dominated the early growth phase of the market.

The consulting firm Galson founded gradually shifted from design for manufacturers of air-conditioning equipment to the design of mechanical systems for buildings. The original equipment manufacturer (OEM) design practice terminated in the late 1950s, marking a certain maturation of an industry that no longer needed outside consultants. Galson remained active in his consulting firm until his death in 1963. ■

HENRY L GALSON **1900 -1963**

Henry L Galson was born in Vienna, Austria. He was drafted into the Austrian army during World War I at the age of 17 and was appointed a commissioned officer after only six weeks of basic training. He served in Russia and Italy. He became an ASHRAE member in 1935. From 1925 through 1963, he actively pursued inventions and designs receiving 15 patents for HVAC&R apparatus. He was a pioneer in developing self-contained air conditioning equipment and the technical background necessary for the development of heat pumps. In 1933 Galson was the co-recipient of the prestigious John Scott Medal for Scientific Achievement, awarded by the Philadelphia Franklin Institute for his development of the self-contained air conditioning unit.. During World War II he developed an aircraft spot cooler for the U.S. Air Force suitable for desert warfare, and an anti-submarine weapon. By 1946, he had become an independent consultant, designing the first truly mass-produced unitary air conditioner for the Fedders-Quigan and Rheem Corporations. His designs included window units, food dispensing equipment requiring refrigeration, residential heating and cooling equipment and packaged air conditioners with up to fifteen-ton capacity. Henry L Galson was inducted into the ASHRAE Hall of Fame in 2000.

(Edited extract from ASHRAE "Hall of Fame" Citation)

Sir DOUGLAS STRUTT GALTON RE
1822-1899

Leading Victorian Sanitary Engineer

[171] Sir Douglas Strutt GALTON **1822-1899**

English "man of science." His mother was related to William Strutt of Derby [22]. Captain Royal Engineers (1855). Secretary to Railway Commission. Referee for plans for main drainage of London (1857). Member Royal Commission on the improvement of the sanitary conditions of military barracks and hospitals (1858), member army Sanitary Committee (from 1862). Also involved with Atlantic telegraph cable and formation of a national physical laboratory. Galton was particularly associated with sanitary science. Designed Herbert Hospital, Woolwich (1860-1862). Invented Galton's ventilating fire grate (early 1860s) adopted for barracks and hospitals. Wrote numerous papers relating to heating, ventilating, and sanitary engineering and to hospital construction. Member many learned societies, including Chairman Council Sanitary Institute (he urged their motto should be *Prevention is better than cure*). He died of blood poisoning.

(Mini-biography from "The Comfort Makers," Brian Roberts, ASHRAE, 2000)

TO

CAPT. DOUGLAS GALTON, C.B., F.R.S., F.R.G.S., &c.,

AS A TRIBUTE OF ESTEEM FOR HIS DISINTERESTED AND UNTIRING EFFORTS IN THE CAUSE OF SANITARY SCIENCE AND THE PUBLIC WEAL,

This Little Work

(WITH HIS KIND PERMISSION)

IS RESPECTFULLY INSCRIBED.

(Dedication from "Robert Boyle: Inventor & Philanthropist")

But Galton's name will always be chiefly associated with sanitary science. The Herbert hospital at Woolwich was designed by him when he was at the war office between 1860 and 1862, and many improvements in barracks and hospitals are due to his initiative. He invented a ventilating fire grate in the early sixties, which was adopted for all military barracks and hospitals, and went by his name. It introduced a new idea in connection with heating apparatus, and General Arthur Jules Morin, of the French artillery, the head of the Conservatoire des Arts et Métiers, considered it the only original arrangement for perfect warming and

The Herbert Hospital, Woolwich in 1906

ventilating with the open fireplace that the century had produced.

Galton gave a course of lectures to the royal engineers at Chatham, in November 1876, on sanitary engineering, which was published in the following year. He was among the first and most earnest supporters of the Parkes Museum, and was chairman of its council from 1882 to 1888. He was also a member of the Sanitary Institute of Great Britain, and acted as chairman of its council from 1885 to 1887. Since the amalgamation of the two bodies he was twice chairman of council from 1888 to 1892 and from 1897 to 1899. He was elected vice-president in 1892, and became also treasurer in 1894, positions which he continued to hold until his death. For many years he was chairman of the board of examiners, and took great interest in the training of sanitary officers, to whom he often lectured, both in London and the provinces. His last lecture to them in London was given on 17 Oct. 1898, when he urged that their motto should be the proverb 'Prevention is better than cure.'

(Extract from Dictionary National Biography, 1970's)

VENTILATION, HEATING, AND LIGHTING.

BY

WILLIAM H. MAXWELL,

ASSOC. M.INST.C.E.

Borough and Waterworks Engineer, Tunbridge Wells Corporation;
Member of the Association of Water Engineers;
Member of the Association of Municipal and County Engineers;
Author of "Progress in Municipal Engineering," "Destructors and the Disposal of Town Refuse," "Construction of Roads and Streets," &c.

With Numerous Illustrations.

SECOND EDITION, REVISED AND ENLARGED.

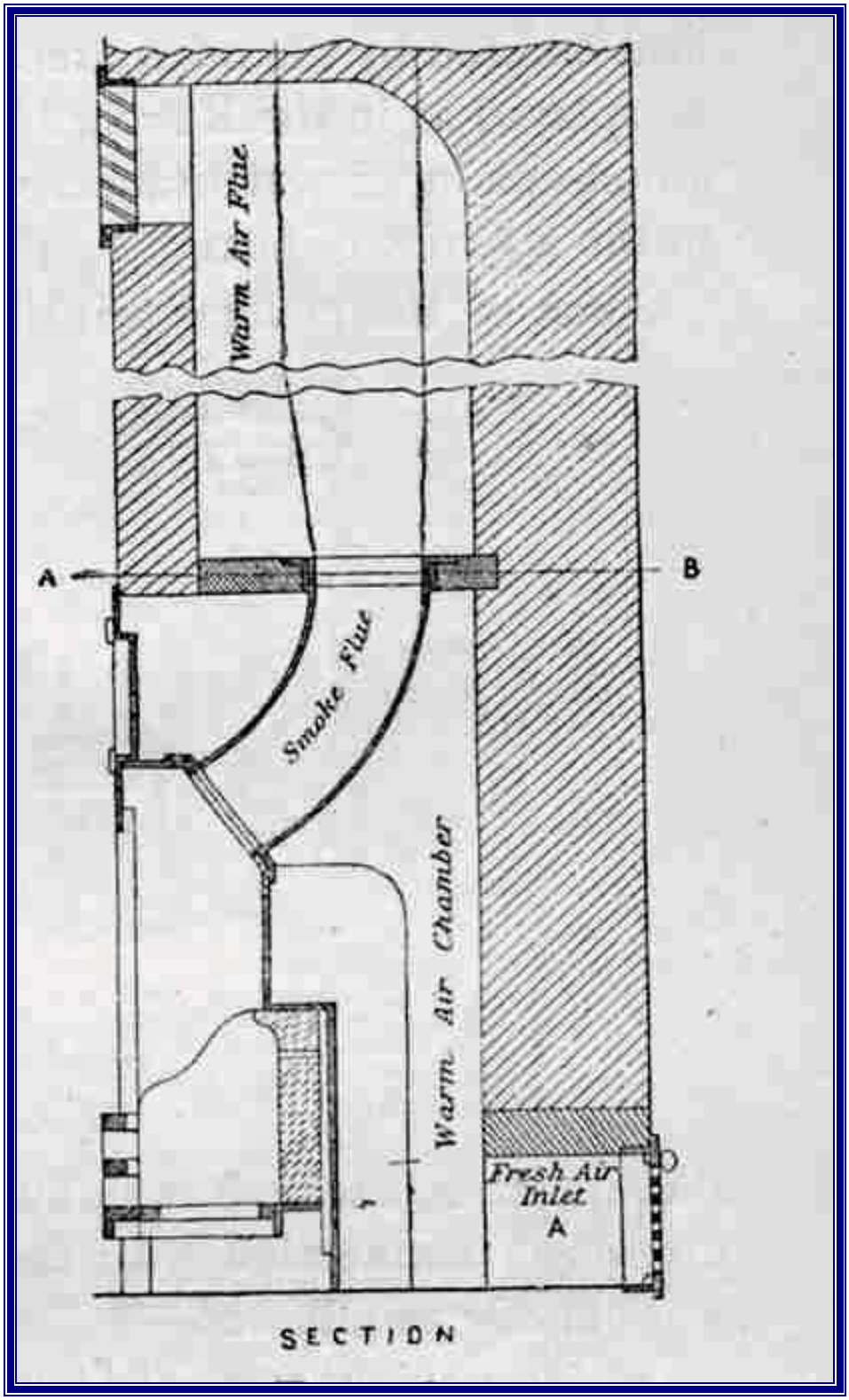
London:
THE SANITARY PUBLISHING COMPANY, LTD.,
5, FETTER LANE, FLEET STREET, E.C.
1907.

(CIBSE Heritage Group Collection)

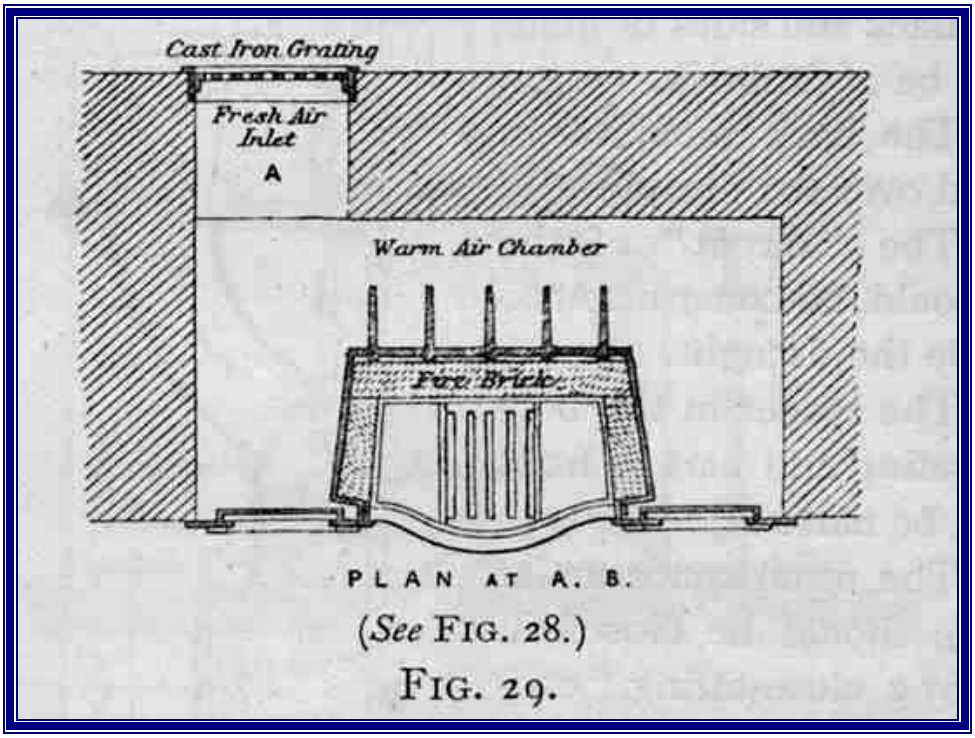
For the admission of warm pure air into a room, one of the best grates in general use is that of Sir Douglas Galton, which he designed for the War Office. The construction and arrangement is illustrated in Figs. 28 and 29.[1]

In this grate, behind the fireplace, is an air-chamber, in which are cast several iron flanges, which project backwards, and serve to increase the heating effect of the chamber, which latter communicates with the external air. The air, after being warmed in the chamber, is admitted into the room by two louvred openings—one on each side of the mantelpiece. The sides and bottom of the fireplace are lined with firebrick, so as to prevent the contact of the incandescent fuel with the iron, and at the same time to preserve a high uniform temperature to assist the combustion. A current of air passing up between the fireclay back and the iron back is thus heated, and is made to impinge upon the upper part of the fire and mix with smoke and gases. The formation of smoke is thus reduced, the combustion is rendered more perfect, and a larger percentage of the heat produced by the fuel is utilised.

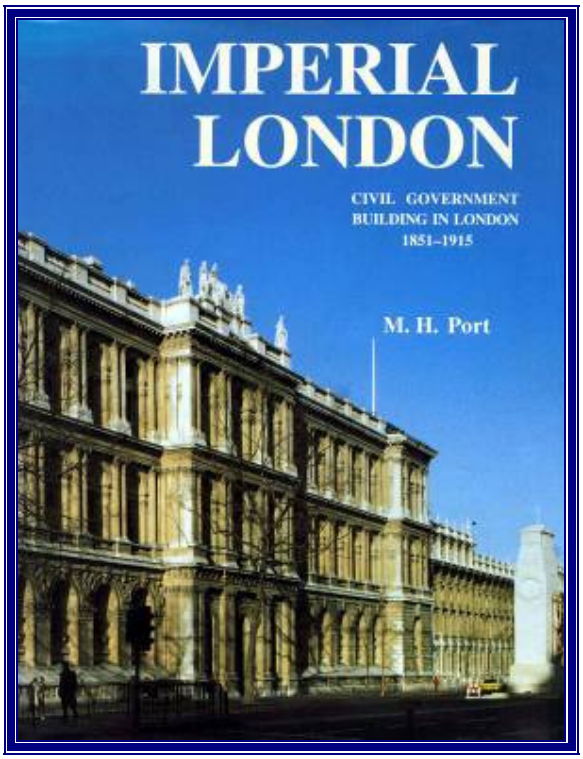
(From Maxwell)



Galton Grate



Galton Grate



(CIBSE Heritage Book Collection, 1995)

While it is highly improbable that the framers of the 1859 Treasury Minute had any such intention as Ayrton ascribed to them, it was true that the large sums expended for professional services were 'withdrawn from the notice of the Treasury' by being paid out of the parliamentary Votes for the various new buildings, to the extent of nearly £24,000 in 1866–9. A competent crown architect and surveyor would 'require a considerable salary and an establishment to use his services efficiently'. Ayrton doubted whether their time would be fully occupied by their Works duties, and suggested that they should, like Pennethorne, service the Woods and Forests also, that department meeting half the cost. A net increase of £1150 would probably be saved by 'putting an end to the practice of employing in future, Architects and others on commission for technical services'. The Treasury might then consider how far the employment of special architects might be dispensed with.[105] Ayrton was thus proposing in effect a reversion to eighteenth-century practice. In this he stood little chance of success, partly because neither he nor the Treasury was prepared to pay a salary that would attract an architect of the necessary distinction,[106] partly because it is inconceivable that the House of Commons would have tolerated a crown monopolist. Ayrton was forced to shift his ground and campaign against the concept of paying architects by commission on outlay, a principle which many MPs and laymen found repugnant as it gave the architect no incentive to restrain the costs of a building.

Even an advisory architect was to be denied Ayrton. Lowe had indeed made up his mind before Ayrton's letter, for the two men had had a previous conversation in which Lowe had made clear his objection to appointing an architect and his preference for an engineer officer, as Layard had suggested as a replacement for Pennethorne.[107] The use of Royal Engineers was an enthusiasm of the Science and Art Department, under the influence of Henry Cole, who developed the buildings at South Kensington with the aid of Captain Francis Fowke (d.1865) and Colonel Henry Scott. In evidence to Lord Elcho's select committee of 1869, Cole had urged the value of employing Royal Engineers (available like tap water) to prepare preliminary plans for public buildings and watch over the execution of 'the artistic completion' for which an architect would be employed if possible on a full-time engagement.[108]

The need to provide for an influential but lately-displaced civil servant may, however, have been the explanation of Lowe's stand. Captain Douglas Strutt Galton, R.E., C.B., F.R.S. (1822–99) [Pl. 77], a cousin of a Liberal politician, Lord Belper,[109] and ally of Florence Nightingale, had a high reputation as a sanitary engineer. From 1862 to 1869 he had been permanent assistant under-secretary at the War Office, in charge of army finance. His office was then abolished, under Cardwell's reforms. He had already, under Gladstone's Exchequer rules, been obliged to relinquish his military rank. He had therefore to be re-employed, or compensated. To Lowe, an old friend, he seemed the ideal person to instal at the Works: an administrator of proven efficiency, and a man familiar with building design and works (he had designed the Herbert Military Hospital at Woolwich, sat on the Thames Embankment royal commission and was deeply versed in railway engineering).[110] Lowe had powerful justification for his action, in that it met the recommendation of Hunt – seen by Gladstone as 'adviser of the Government, and not merely of the 1st Commissioner' – who, aware that a suitable architect could not be obtained for £1500 a year, counselled the Treasury to appoint a Royal Engineer officer.[111] Gladstone found the argument conclusive, and Galton was appointed Director of Works and Buildings. At the same time, the appointment of an assistant surveyor was authorised.[112]

Alternative scheme for the Natural History Museum on the Thames Embankment

At first, Ayrton's resentment was palpable: he drew up instructions by which the new Director was to prepare not only estimates but also plans – driving Galton to protest – effectively – to the Treasury.[113] Then, no advantage, Ayrton insisted, could come from Scott's government offices designs being examined by Galton, 'who is not an architect . . . attempting to supersede the responsible functions of so skilful an architect as Mr Scott'. It required Lowe's reiterated instructions to bring the plans under Galton's scrutiny.[114] But Ayrton came to appreciate Galton's abilities. He drew up revised instructions by which he was to take instructions from the First Commissioner, 'give directions for the preparation of all plans, elevations, and estimates of new works, &c'; 'superintend the preparation of contracts with the assistance of the solicitor'; 'give instructions as to the mode of executing works'; and generally run the technical department.[115] Thus he advised not only on ways of reducing estimates for the new Home and Colonial Offices, but also recommended modifications in the plans for the new Law Courts, Natural History Museum and additions to the National Gallery. He kept a watchful eye upon buildings in progress, 'in the way that a person who is building a house looks in on behalf of his own interest, to see how the work is going on'; though careful not to diminish in any way the architect's responsibility.[116]

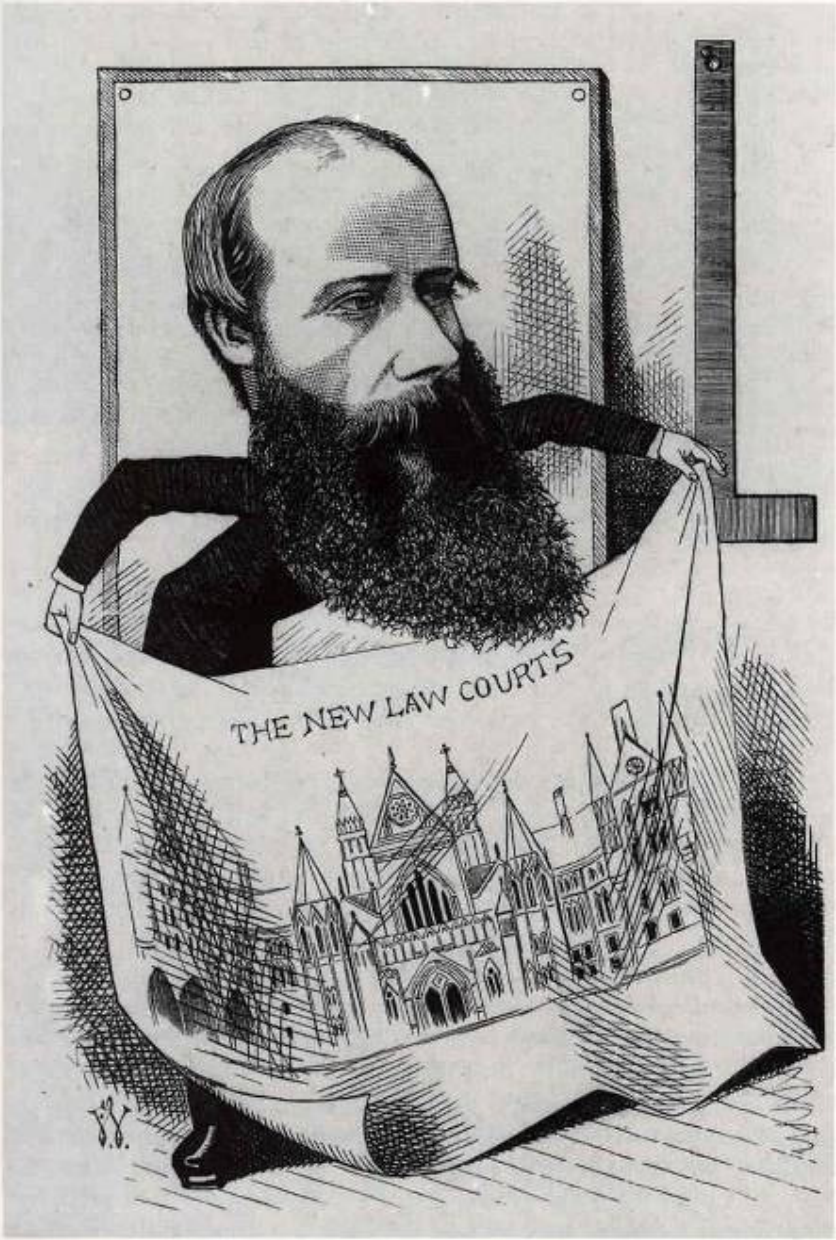
Part of Galton's work was to build up the Technical Branch, which had started with two Assistant Surveyors under the 1857 establishment, posts now held by John Taylor[117] for London, and William Starie, Country. In February 1871 an assistant, Henry Tanner, had been appointed after examination. When two more assistants were required in June 1873, Galton played his cards cleverly to obtain the man he wanted. He insisted that the examination must

be more extensive for the superior post (£210–£300),[118] which led the Treasury to assert that examination would be inappropriate; the post should be filled by promotion, 'because there is no test like trial'. Galton responded that there were no juniors to promote, and an Order in Council of 1873 prohibited the permanent appointment of temporary employees commencing their duties after June 1870. In fact there was a suitable temporary assistant, and after Ayrton took up the cudgels on his behalf, the Treasury acquiesced in his appointment.

The Treasury very much disliked the employment of 'temporary' staff, paid weekly, continuously over long periods. Some of the Works' draughtsmen had been so employed for more than six years in 1872. Galton pointed out that their circumstances were quite different from those of clerks; they were taken on for a job because of their special qualifications, and if not required a permanent employee would be an incubus. At one time it might be a specialist in drainage that was needed; at another, one in decorative work. The use of temporary men gave the necessary flexibility. Nevertheless a core of permanent draughtsmen would be an advantage, and he suggested appointing one first-class (£200 × £15 – £300) and one second-class (£100 × £10 – £200) draughtsman for each of the four Assistant Surveyors (two were handling Post Office business). The Treasury sanctioned the establishment, but was less happy about making temporary men permanent: only their service antecedent to June 1870 secured their position.[119] But these men provided the pool from which were promoted the Assistant Surveyors of the future.

Resentment of the control imposed on him by the Treasury was somewhat ironically – given that he was 'perfectly sound on finance'[120] – to be Ayrton's downfall. In 1873 he clashed fiercely with the Treasury over the sum that Street might be allowed for his New Law Courts design, his recalcitrance eventually requiring the intervention of the cabinet. 'There is something thoroughly "mulish" about him', commented a colleague. 'He seems to resist for the pleasure of resistance.'[121] He then compounded his sins by disassociating himself at the earliest opportunity from responsibility for decisions imposed on him by the Treasury, in an official speech in the Commons[122] – behaviour which called forth a rebuke from *The Times*, and from Gladstone an assertion of the doctrine of ministerial responsibility.[123] His removal from the Office followed in the recess.

110. George Edmund Street, R.A. (1824–81). Celebrated as a Gothic church architect, Street, having been placed in the New Government Offices competition of 1857, was nominated for both the limited competitions of 1866–7: the National Gallery and the New Law Courts. Awarded the first prize for the latter jointly with E.M. Barry, he was given the commission by the First Commissioner in 1868.



(Text extract and pictures from "Imperial London")

Once again, no detail was too small: warrants for apothecaries, appointment of staff surgeons for the West Indies, an outbreak of yellow fever in Bermuda, victualling on transports, how an 'iron house' at Aldershot should be used – for a soldiers' recreation room, as the War Office wanted, or for an officers' club as proposed by the Horse Guards. Florence rallied Parliamentary support and the recreation party won; then she framed a set of Regulations for reading-rooms and listed the appropriate furniture and fittings. 'We may not hope to make saints of all,' she wrote of the soldiers, 'but we can make men of them instead of brutes.' She even paid attention to the comfort of their horses. The design of the new loose-boxes for the cavalry found its way to South Street. They ought to have windows, she told her cousin's husband Captain Douglas Galton, now in a senior position at the War Office. 'I do not speak from hearsay but from actual personal acquaintance with horses of an intimate kind.' It was of the utmost importance to their health and spirits to be able to see out. 'I have told Dr Sutherland but he has no feeling.' Dr Sutherland retorted that windows *had* been included in the design and 'every horse can see out if he chooses to stand on his hind legs with his forefeet against the wall.' If her theory was correct, he added, this was the least the horse could do for his own good.

(Anecdote from "Florence Nightingale," Elspeth Huxley, 1975)