OZONAIR LTD

PURE AIR VENTILATION & MANUFACTURER
E L Joseph established the Company about 1900 to manufacture and sell ozone-generating appliances to create “pure air ventilation.” (Their booklet Ozonair System of Pure Air Ventilation, published in 1921, follows.)

In 1912, the Company designed and installed a number of major ventilation systems for the Central London Railway. By 1921, ozone had been provided for many well known buildings including: Houses of Parliament, London Law Courts, Savoy Hotel, The Palladium, etc., etc.

In 1925, Ozonair introduced the Ventex filter. By 1929, the growth of the business led the Company to move from London’s Victoria Street to offices & works in Longmore Street.

World War II saw the firm develop air filters to combat the possible use of poisonous gases.

Further business expansion saw Ozonair take a lease on part of the Short Seaplane Works on the Esplanade at Rochester and concentrate on manufacturing.

In the 1950’s and 60’s, Ozonair took on the manufacture of air conditioning equipment under licence, notably Connor high velocity mixing boxes, Cambridge Filter products, and Kennard-Nelson air handling units, all from the USA. Later it added High-Jet induction units from Italy. Production expanded to a site at Aylesford, near Maidstone, and in 1974 all work was transferred there.

In 1976 Ozonair was acquired by the Senior Engineering Group.
OZONAIR
SYSTEM OF
PURE AIR
VENTILATION
OZONAIR
LIMITED

Patentees and Manufacturers of
Apparatus for the Commercial Production of OZONE for all Purposes

APPLICATIONS

AIR PURIFICATION
WATER PURIFICATION
THERAPEUTICS
FOOD PRESERVATION
VENTILATION
DEODORISING
BLEACHING
BREWING

CHEMICAL PROCESSES
LABORATORY OUTFITS
EFFLUENT TREATMENT
OXIDATION
AGEING

THE OZONAIR SYSTEM
OF
PURE AIR VENTILATION

Awards
Mulhausen 1909
Diplome d'Honneur and Gold Medal, also
Special Diploma d'Honneur and Medal of
the City of Mulhausen.

Moscow 1909
Great Silver Medal of the Ministry of
Commerce and Industry.

Crystal Palace 1906
Gold Medal.
Royal Sanitary Institute
Medal.

Franco-British Exhibition 1908
Grand Prix, Diploma d'Honneur
and 3 Gold Medals.

Vienna 1910
Gold Medal.
Turin 1911
5 Grand Prix, 2 Diplomas d'Honneur
2 Gold Medals, 2 Silver Medals.

Lyon 1914
Silver Medal.

Office, Showrooms and Laboratories:
96, VICTORIA STREET, WESTMINSTER, LONDON, S.W. 1
Works: PONDERS' END, MIDDLESEX


AGENCIES IN ALL PARTS OF THE WORLD
MODERN VENTILATING PLANT

Fig. 1.—The Air Washer and Preheater on the right—capacity 30,000 cubic feet per minute

Fig. 2.—CZONAIR PURIFYING APPARATUS, forming part of the above ventilating plant
THE OZONAIR SYSTEM
of
PURE AIR VENTILATION

VENTILATION

In order properly to define the meaning of "ventilation," it may be said to be the art or science of changing or renewing the air inside any enclosed space. It is not necessary that this space should contain human beings or other living organisms which breathe and, therefore, consume oxygen, because there are occasions when ventilation should be applied to unoccupied spaces, which are used occasionally.

Places where human beings congregate require ventilation for several reasons. Firstly, the living organism is giving off continuously a certain number of heat units, which tend to increase the temperature of the air; secondly, human beings give off organic compounds from lungs, body and clothes, which quickly putrefy, render the air unhealthy and produce an irritant effect on the nervous system; thirdly, moisture is given off from the same sources, thus increasing the humidity of the air, which makes breathing more difficult, and produces a feeling of lassitude; finally, oxygen is being consumed, thus rendering the atmosphere inefficient.

Places which remain unoccupied for long periods, such as cellars, strong rooms, etc., require ventilation, because the air becomes stagnant. Moisture condenses on the walls, moulds and fungi tend to grow, and the condition of the atmosphere becomes often such as to be dangerous to those persons who have to visit these places.

From the foregoing it will be gathered that the chemical purity of the air has not so much to do with the feelings of discomfort and lassitude we suffer from in badly ventilated rooms as the excessive heat and moisture of the atmosphere and its motionless uniformity. To many, the smell of such an atmosphere is offensive. The heat and moisture fatigue the heat-regulating mechanism of the body, and the heart sends the blood, in place of to the brain, to the skin to be cooled. The motionless uniformity has a depressive effect, for the skin is not stimulated by the movement and freshness of a changing atmosphere. This effect on the skin is of utmost importance to health and comfort, and the offensive smell depresses the nervous system. Unless the air is moving, the layer next to the skin becomes overheated and supersaturated with moisture, thus causing great discomfort. Physiologists, in fact, have now decided that the atmospheric conditions that really do affect the human being are those more intimately associated with its smell, motion, temperature and moisture, rather than its percentage of carbonic acid gas or other chemical constituents. The health of man depends upon the condition of his skin, olfactory and nervous systems, the circulation of his blood, and his bodily heat, and the most adverse influence of all is uniformity of the air.

It is a mistake to believe that ventilation can be properly effected by opening doors and windows. As our homes are built nowadays, this is only productive of draughts produced by currents and eddies of air; with the result that when the body is in a low state of vitality (generally known as "run down"), colds and chillis are easily acquired.

Theoretically, the correct method of ventilating is to introduce into the space in question just that quantity of fresh air required to give the necessary degree of change and purity, without draughts or uniformity and without excessive heat or excessive humidity.

PURE AIR

The question of the purity of the air we breathe must always be one of the most engaging and serious problems. Whether the place be the home, the office, the workshop, the vehicle,
the place of amusement, or even the street, the condition of the atmosphere is equally important. It can scarcely be too emphatically asserted that more than one-half the ills we suffer from are due to the slow poisoning produced by the foul air of the rooms in which we live and breathe.

It is a popular belief that the contamination of the air of a place in which a number of persons are congregated is due to an abnormal amount of carbonic acid gas. This is supposed to cause the stuffiness, smell and disagreeable taste usually perceived. Such, however, is far from being the case. Carbonic acid gas is a tasteless and perfectly inodorous gas. It is also practically harmless, except in concentrations far greater than are ever met with in the worst cases of bad atmospheres.

The fact is, as we have already shown, that we are constantly throwing off from the skin and lungs the waste products of the body, which putrefy, and, combined with supersaturation, overheating and motionlessness of the air, are the main causes of fatal atmospheres.

Fortunately, we have a simple and ready means at hand for purifying the air, in the form of Ozone.

**OZONE: ITS WONDERFUL PROPERTIES**

Ozone (in nature) is always present in the atmosphere. Its principal sources are probably the electric discharges during thunderstorms, the silent discharge from clouds, the evaporation of water (and especially of saline water, as in the sea foam), and the action of some vegetable products on the air. Ozone is also formed by the action of sunlight on the clouds. The Ozone present in the atmosphere plays an important part in keeping the air pure and fresh, and destroying the deleterious organic matter constantly passing into the atmosphere from decaying flesh, animal exhalations, etc.

In the open country, and especially at the seaside, Ozone can always be detected; but in the air of towns it is either absent or exists in very small quantities, which, however, if present, are most advantageous to health. Organic matter, smoke, sulphur compounds and other impurities with which the air we breathe is always vitiated, destroy Ozone, i.e., are in such disproportionate quantity that they absorb all the Ozone. If there were enough of it in the air these impurities would be swept away.

Apart from the ordinary advantages to a healthy person, an ozonised atmosphere possesses positive and curative principles, valuable properties in many common ailments. In Anaemia, Ozone has been found very beneficial. It has the effect of multiplying the red corpuscles of the blood, increasing the appetite and generally adding tone and vigour to the system. In cases of heart weakness, medical men have prescribed an ozonised atmosphere. In nearly all cases of chest complaint, such as asthma, bronchitis, pleurisy, pneumonia, influenza, etc., an ozonised atmosphere is very relieving to the sufferer. It is not too much to say that the future treatment of phthisis will be indebted in no small measure to Ozone.

Ozone, unlike oxygen, is possessed of a very powerful and penetrating odour, and very slight traces of this gas can readily be detected by the sense of smell. It has the power, in strong concentrations of oxidising or destroying the offensive germs that the air may contain; indeed, it is the most powerful oxidising agent known, which is due to the fact that it readily parts with the third atom of oxygen contained in the molecule. The conversion of oxygen into Ozone may, for simplicity, be expressed chemically by the equation \( O_2 + O = O_3 \), and it is this third atom which splits off so easily and enters into combination with other bodies that is the basis of its value for the purification of the atmosphere, etc.

When manufactured artificially, pure Ozone, if diluted to the strength in which it is used for such purposes as ventilation, etc., has a most agreeable and refreshing odour, similar to that met with at the seaside. The sanitation of rooms by ozonised air (antiseptic ventilation) diminishes the number of organic germs and renders innocuous the exhalations from persons in confined spaces. Ozone also instantly neutralises the unpleasant effect of cooking and other odours, and removes tobacco smoke, fog, etc.
This property of Ozone to neutralise smells (generally known as Deodorising) is of great commercial value apart from the incidental use of Ozone in this respect when it is applied for ventilating purposes. There are many trades and industrial processes where smells are produced which are not only almost unbearable to the persons immediately concerned, but are liable to cause a nuisance to the neighbourhood and often result in injunctions being obtained against the owners of such business. Such places are public kitchens, hide and skin warehouses and tanneries, soap works, bone mills, oil and manure works, etc., etc. In cases of this kind the unpleasant nuisance is generally produced by the putrefaction in the air of minute organic particles given off from the substances under manufacture, and these particles can readily be treated and oxidised by Ozone so that the trouble is abated. The method by which the treatment is effected is not necessarily the same as embodied in the OZONAIR SYSTEM of Pure Air Ventilation, but may, in fact, be accomplished in several other manners according to the nature of the substance or manufacturing process or conditions of the particular case. Under the circumstances, and as deodorising is of great commercial importance, the subject has been dealt with in a separate pamphlet.

HEATING

The warming or heating of the air of a room or building is necessarily allied to the subject of ventilation.

The correct method of heating rooms or buildings, in relation to ventilation, except under special circumstances, is to introduce fresh air at the correct temperature and to supply any additional heat that may be required, either by means of radiators on a central heating system or by the usual methods of open fires, electric radiators, etc.

# # #

Description of the Ozonair System of Pure Air Ventilation

The foregoing will have given a general idea of the objects to be aimed at in effective ventilation; also information of the nature of Ozone and its advantages for use in the purification of air, which are incorporated in the Ozonair System of Ventilation. In considering the application of Ozone, combined with proper regulation of heating, to any class of room or building, the advantages may be summarised as follows:

1. The provision of a perfectly clean and pure atmosphere.
2. Stiffness due to the congestion of human beings (emanations from lungs, body and clothes) is removed.
3. Odours due to cooking smells or other causes are eliminated.
4. Tobacco smoke and fog are eliminated.
5. The air is rendered fresh and invigorating instead of being inert and stuffy.
6. The cost of operating, represented practically by the electrical energy consumed, is almost negligible.
7. Only about one-half of the volume of air is required, compared with an ordinary system, and better results are obtained without the risk of producing draughts.
8. From the foregoing (7) it will be obvious that the cost of ventilation, both in regard to the installation, and the upkeep and working, will be considerably reduced by the adoption of the Ozonair System.
9. Quite apart from the hygienic and humanisation aspect, it must appeal to the business man that a pure atmosphere is a standing advertisement for any building or business.

The Ozonair System of Pure Air Ventilation has been designed to overcome the difficulties previously described, and to fulfill in a perfect manner the requirements of the definition of theoretically correct ventilation in combination with the use of Ozone. It is arranged so that draughts are avoided, whilst the amount of air and strength of added Ozone are adjusted in accordance with the temperature, the state of the barometer, the number of people present, and any other desired conditions.
Cleaning and Purifying the Air—The arrangement of the plant is shown diagrammatically by Fig. 3.

Briefly, the system consists in drawing the air supply from as clean and pure a source as possible, and removing the smuts and other solid floating matter by means of one of the special Air Washers or Filtering Screens manufactured by the Company and described further on. During this operation, practically the whole of the sulphurous acid and other deleterious gases met with in all large cities are absorbed. Incidentally, the washer or screen can be arranged under certain conditions to cool the air up to about 10° F. at the external and internal temperature. The quantity of water used for washing may amount only to a few gallons per hour for a comparatively large installation. The cleaned air is then passed into the mixing chamber, where it is purified and partially sterilised by the addition of a minute quantity of pure Ozone, which also gives it a refreshing character possessed by the air at the seaside and on mountain tops.

* Required only where a continuous current supply is furnished.
Heating and Cooling the Air—The method of treatment imparts a pronounced sense of coolness to the atmosphere in hot weather, although it is interesting to note that in cold weather this is not observed. A heating or cooling coil for varying the temperature is usually included in the system and placed in the air chamber or other convenient position.

Distribution—The purified fresh air is forced by the fan into the building through ducts, which are provided with openings at suitable points. These ducts are carefully proportioned, based on the long experience which we have obtained in this class of work. They are generally made of galvanised sheet iron, and where the question of appearance has to be considered, they may be covered by a wooden casing or cornice to suit the prevailing style of decorations. In cases where the building has not yet been erected, a considerable amount of expense may be saved by forming the ducts in the brickwork or concrete construction.

Extraction—In most cases it is unnecessary to provide any special extraction system, as the foul air finds its way out through the usual openings. In the case of theatres and picture palaces, however, it is desirable. There is usually a false ceiling over the auditorium, and, provided it is airtight, it is a simple matter, in such cases, to provide one or more ornamental gratings in the ceiling and an extraction fan in the roof. The false ceiling then becomes an extraction chamber for the foul air, and aids very much in the distribution or circulation of the air in the building. Failing this outlets may be provided and connected together with suitable duct work.

For ordinary premises, where extraction is necessary, the system to be adopted would be designed to suit the particular requirements.

Operation and Economy—From the foregoing description, it might appear that the plant required to work the system would be elaborate and complicated. So far from this being the case, however, it is so simple and easy to manipulate that the control may be left to an inexperienced person. The whole working is practically automatic, and depends on the handling of two or three ordinary electric switches. The installation is simple and may be run for long periods with very little attention. The space taken up is comparatively small, and the expense of upkeep is so trifling as to be almost negligible, a comparatively large building being supplied at a nominal cost for power, whilst the amount of wear or depreciation is infinitesimal, if ordinary care and attention be given to the apparatus.

ANY EXISTING SYSTEM OF VENTILATION CAN BE CONVERTED INTO AN “OZONAIR SYSTEM OF PURE AIR VENTILATION” AT COMPARATIVELY SMALL COST

In many instances it is desired to convert an already installed ventilation system. There may be specific reasons, such as the large amount of air now being introduced causing draughts, or the results generally obtained not giving satisfaction. The change can usually be effected by simply adding an Ozonisng Plant and, if desirable or necessary, the air-washing plant. In many such cases the number of air changes can be reduced and much economy of working effected.

A very large number of these conversion installations have been fitted, and in every instance completely satisfactory results have been obtained.

DATA REQUIRED FOR QUOTING PRICES

As each plant of this description has to be proportioned to meet the special conditions obtaining, it is only possible to quote prices after the inspection of plans of the building, or of the building itself, and the receipt of data regarding the uses to which the building is to be put, the number of people it will contain, etc. In order to assist us in preparing
such plans, and to save our clients unnecessary correspondence, we append a list of data required which should be answered as fully as possible, in order to enable us to furnish a scheme and to give a correct estimate of cost.

DATA REQUIRED

1. What is the class of building and for what purpose is it or will it be used?
2. If it is a public building or theatre, give seating capacity and state if smoking is permitted.
3. Furnish plans or drawings if possible.
4. If an existing building, has it a ventilating system at present in use, and, if so, please describe as fully as possible. Give the quantity of air supplied by the fan, or, if this is not known, the speed, size and type.
5. State if there are any complaints as to present ventilation and their nature; also give particulars of any special requirements or precautions to be observed.
6. Is the air washed or filtered? If so, describe the method.
7. Indicate on drawings the space available for the installation.
8. Give particulars of heating appliances in use, type of boiler, whether water or low-pressure steam system, etc.
9. State voltage of electric supply, and whether continuous or alternating; if alternating, the periodicity (cycles per second) must also be given.
10. Give particulars of water supply.

DESCRIPTION OF THE VARIOUS APPARATUS EMPLOYED IN THE OZONAIR SYSTEM OF PURE AIR VENTILATION

These comprise:

(a) Air-washing Apparatus  (c) Electrically-driven Fan  (f) Converter (where required)
(b) Washing Apparatus  (d) Condenser  (g) Switchboard
(e) Transformer

Fig. 4.—Air Washer for large installations.

Air-Washing Apparatus—Alternative methods of washing the air are employed, according to the size, etc., of the installation. For the smaller capacities the Filter Screen, shown in Fig. 3, page 7, is usually used.

This screen is constructed of finely woven metal gauze, mounted in a suitable manner on a framework of angle irons and wrought iron tube. It usually assumes the form of a zig-zag when looked at in plan, and the area is determined by the amount of air which is required to pass into the building. The gauze is kept covered with a very thin film of water by means of our special atomising appliance, which breaks up the water into a very fine spray. In fact, the water in the front of these screens is generally present in the form of a fine mist or
The air being drawn through this mist and the film on the screen is thoroughly washed, and all suspended matter and sulphurous and other impurities are removed. At the same time, the extensive surface presented for evaporation is instrumental, in hot weather, in reducing the temperature of the incoming air by several degrees, but in cold weather this effect is not produced.

For the larger sizes of installation an Air Washer is included, as shown in Fig. 4, page 8. This consists essentially of a galvanised sheet steel casing suitably assembled together on galvanised angle, tee and flat iron bars. Inside there is the spray chamber washing surface and eliminator baffles. The air is drawn through the spray chamber of the air washer where it comes into contact with the very minutely atomised spray of water. The spray nozzles are so spaced as to ensure even distribution of the atomised water and thus contact with all the air which enters the washer.

The heavy particles of dirt fall to the collecting tank at the bottom and the smaller particles are carried forward and become removed on the surface of the special shaped baffles which form the washing surface and eliminator plates.

The air then leaves the eliminators without any free moisture whatever.

The used water after filtration is recirculated by an electrically driven pump to the sprays thereby reducing the amount of fresh water needed.

**Warming Apparatus**—This usually consists of a battery of radiators of the "indirect" type, mounted in front of the air filter or fitted in a chamber after the air has passed through the washer. In some cases a "tempering" battery is fixed behind the air filter and in front of the air washer for use in very cold weather. Arrangement is provided for regulation, and the source of heat may be provided by a hot-water or low-pressure steam boiler of the usual type, which is included if necessary.

**Electrically Driven Fan**—The type of fan which we generally employ as the result of our experience is the "Stocco." The special features of this type of fan, apart from its strong mechanical design, are its high efficiency and silent running under normal conditions. The fan, as supplied by us, is generally arranged direct-coupled to an electric motor, which is mounted on a concrete or cast-iron pedestal. The outfit usually comprises fan casing, wheel and shaft, together with base-plate for motor, the fan runner being mounted direct on the motor shaft. The outlet may be arranged to any desired angle, as the conditions of the installation require. The motor is of approved design and manufacture, shunt wound, and provided with ring lubrication and all the latest improvements. A typical fan direct-coupled to its motor is shown by Fig. 5.

*N.B.*—The fan may be driven by any other form of motive power if desired.

**Ozoniser**—This apparatus, one of the most important parts of the installation, is supplied in several different types, each suited to particular circumstances. The one generally used for ordinary cases is made up of units (Fig. 6), each consisting of two specially designed electrodes, separated by a dielectric, and held in position by insulating clamps of
non-conducting material. The ozoniser consists essentially of metal and porcelain, and is entirely non-combustible. Owing to its design, it can be made in any size or capacity. Each individual unit is connected by its two electrodes to a separate terminal on small bus-bars running along the whole length, so that the whole or any number of units may be in use at one time. Guards of strongly meshed wire are provided to protect the apparatus from injury or interference.

In the Ozonair System of Pure Air Ventilation this type of ozoniser is generally enclosed in a case of metal, as shown by Fig. 7. The door in front is fitted with an arrangement which automatically cuts off the electric supply when it is open. At the bottom is a removable frame in which an air filter of absorbent cotton wool is fitted. A shelf is provided at the side for the transformer. The inlet to this case, under the cotton wool screen, communicates with the source of fresh air, whilst the outlet at the top of the case communicates with the intake of the fan, so that, in fact, the ozoniser forms a by-pass to the main supply of fresh air.

For the larger sizes of installation, or where the supply of ozone exceeds the usual average, a new type of apparatus has been designed, as shown in Fig. 8. In this type the ozoniser and case are self-contained and form a unit which can be placed on the floor of the plant room. The transformer is "housed" in the base of the case, which is fitted with hinged inspection doors, back and front. The whole apparatus is very substantially designed for use under the severest conditions, and is made in several sizes up to the largest capacities.

**Transformer**—Ozonair transformers are made in several sizes, varying in capacity from 100 watts upwards. The coils are very carefully wound by special machines, and each layer of wire is separated from the next by a special insulating cloth. The iron core is of the very best permeable soft iron, and is shaped so as to give the maximum of efficiency. The coils are wound on formers, and are subsequently impregnated with an insulating compound in vacuo. Afterwards, they are mounted in oil-cooled cast-iron cases, with cable end terminals. One of these transformers is shown by Fig. 9. The transformers are made to give a variation of the secondary voltage, the primary being wound in several steps, having a range of about a quarter to the maximum required.
voltage, and by this means the amount of the ozone can be adjusted to any required strength. The regulation is effected by a multiple switch mounted on the switchboard.

**Rotary Converter**—For the production of Ozone, alternating current is necessary. Where direct current only is available, the small amount of alternating current necessary for the Ozone generator is produced by a rotary converter. A typical machine is illustrated by Fig. 10. These converters consist of one machine with a field common to both motor and generator. The armature is former-wound, and provided with a commutator at the D. C. end and slip rings at the A. C. end. The shafts run in ball bearings, and box type carbon brushes are employed. All the windings are impregnated by a special vacuum drying process, ensuring perfect insulation and freedom from breakdown.

**Switchboard**—The illustration, Fig. 11, shows a typical switchboard, as usually supplied with our Ozonair System of Pure Air Ventilation, although the design is sometimes modified to meet varying conditions. The framework consists of substantial metal bars on which are mounted the following apparatus: ammeter of approved design in metal case, with clear scale and large pointer; semi-enclosed starter in cast-iron case with automatic over-load and no-load releases; totally enclosed Ozone regulator for regulating the alternating current on the primary side of the transformer; quick break double-pole switch mounted on porcelain and enclosed in iron case; two single-pole fuses of ample dimensions mounted on porcelain and enclosed in iron case.

All the various component parts of the Ozonair Installations are of the best and most reliable material and manufacture, and are guaranteed.

**OZONAIR SYSTEM FOR EXTREME CLIMATES**

In certain countries where extremes of heat or cold are the rule, any system of ventilation by which large volumes of the outside air are introduced, must have considerable drawbacks.

In very cold climates the object is always to retain the internal warmth of the building, and there is great difficulty in preserving a pure atmosphere unless at a great expense of fuel. There are other difficulties also. Hence it is that in some cold countries the air of the houses, especially those used for business purposes, is always more or less fetid and unpleasant.

Similarly, in very hot and moist climates such as India, etc., the object aimed at is to keep the air of the building as cool and dry as possible. For this reason, it is desirable to keep the place as free from outside air as possible. This usually presents much difficulty.

It is with the object of overcoming the aforementioned obstacles that this special modification of the Ozonair System has been designed.
In this system the air of the room or building is circulated over and over again through the apparatus, a correct proportion of fresh air being at the same time drawn into the system. Each time that it circulates it is washed, dried and cooled, or heated, as the case requires, and it is also purified. In this manner the coolness or heat of the air is conserved, and at the same time a perfect ventilation of the room or building is obtained. The system is operated in exactly the same manner as the ordinary Ozonair System of Pure Air Ventilation, and the cost of installation and upkeep is about the same. It has the peculiar advantage that at any moment it can be changed into the ordinary Ozonair System, taking the whole of the air supply from outside. A diagrammatic arrangement of the plant is shown by Fig. 12.

![Diagram]

**THE OZONAIR RECIRCULATING SYSTEM OF COMBINED HEATING AND VENTILATION**

This system has been designed to meet the requirement of a simple and inexpensive method of heating and ventilating factories, warehouses, and other similar large buildings. It combines all the advantages of the Ozonair System of Pure Air Ventilation without the drawbacks of the ordinary recirculating method of factory heating.

In general, this method consists in providing a unit made up of a metal casing in which is contained a heating element over which the air is passed over and over again, by means of a fan—the air entering at the base and being emitted from the top. As an air heating apparatus it is no doubt efficient, but its disadvantages or limitations are too obvious to need comment.
The Ozonair Heating and Ventilating Unit retains all the advantages of the ordinary apparatus by which great economy is effected in the heating, and combines with it, at practically no additional working cost, a perfect form of ventilation on the Ozonair principle. This will be apparent from a glance at Fig. 13 (two views) of the complete apparatus.

From this it will be seen that the main body of air is drawn in by the fan, and with it a proportion of fresh air. This is forced through the heating chamber and then through the ozoniser, from whence it is distributed by means of the ordinary metal ducts to the various parts of the room or floor.

The proportion of fresh air to that of recirculated air can be adjusted within wide limits. For instance, on starting up on a cold day the fresh air inlet could be completely closed and the place would then be warmed up in a correspondingly quicker time. Afterwards, the admission of fresh air could be adjusted to any requirement. In similar manner, the regulation of the heating can be effected by the system of valves, and the strength of ozonisation is also capable of adjustment to any required degree.

The whole unit is self-contained, requires no special foundation, and can be fixed on any kind of floor. The casing is composed of stout metal plate, strengthened with angles, all bolted together. The various parts of the apparatus are mounted on a strong framework in such a manner that any portion can be easily detached or inspected. The switch gear for controlling the Fan Motor and the Ozone apparatus is fixed to the casing or can be placed in a convenient position away from the unit.

The units are at present made of a capacity to deal with about 3,000 to 4,000 sq. ft. of floor space, according to circumstances, but special sizes could be supplied if necessary.

Full details, prices, etc., will be sent on application, after such of the information asked for on page 8 as is appropriate, has been furnished with the inquiry.
OZONAIR SMALL PORTABLE OR FIXED OZONISERS

In some cases it may be required to purify the air in one or two rooms or offices, and where the number of persons is a small factor in the conditions of ventilation, these small ozonisers may be used with advantage. They are made in several forms, for continuous or alternating current, taking only the same small amount of electric power as an ordinary lamp. They are suitable for use in rooms or places of from 3,000 to 12,000 cubic feet capacity, and some of the larger ones have an output of about 60,000 cubic feet of ozonised air per hour. Some typical patterns are shown by Figs. 14—16, and full particulars and prices of these ozonisers will be found in our Catalogue No. 1.

Purity of Ozone Generated

—Ozone for ventilating purposes must be pure: hence, only those generators should be employed which are capable of producing Ozone unadulterated with any other substance.

Ozonair generators are characterised by the fact that they produce absolutely pure Ozone, entirely free from any contamination or harmful impurities, such as nitrous oxide, etc., which at once neutralises the good effects peculiar to Ozone. This statement is confirmed by many well-known independent authorities.

The fact that thousands of Ozonair apparatus have been in use since 15 years is sufficient proof of their superiority for the purpose.

Construction of Ozonair Generators—Ozonair generators are constructed on sound and substantial lines and may, therefore, be worked continuously, since they are not liable to get out of order. The necessity for continuous operation is, of course, an essential feature of any practical apparatus utilised for the purification and disinfection of the air on a large scale. No chemicals or any other substance are used in connection with the operation of Ozonair generators. All that is necessary is a supply of electricity, which may be at any voltage, and obtained from an electricity supply undertaking, a private plant, or from accumulators.

Several different patterns of generators are manufactured by this Company. Each one is suitable for working under certain particular circumstances, although nearly all the small portable types are available for ordinary use. The variation in pattern in these small types is for the purpose of meeting any special condition or requirement.
Cost of Operation—It has been found from actual experience that the average cost of producing ozonised air by Ozonair generators does not exceed one six-hundredth part of a penny per thousand cubic feet, and for large installations this estimate may be somewhat reduced. The yield of Ozone is far greater with Ozonair generators than with any other known make of ozoniser.

SOME APPLICATIONS

In the following a few examples are given of the applications of the Ozonair System of Pure Air Ventilation, together with the peculiar advantages gained in each instance. The list is by no means complete, and the reader will be able to extend the number of useful applications ad infinitum, bearing in mind that no place is too large or too small to which the system can be applied. Moreover, from our vast experience, we are able to deal with the most difficult and complex problems of ventilation and air purification or conditioning.

Public Halls, Government and Municipal Chambers, Stock Exchanges, Etc.—These places are usually very crowded, and the amount of space allotted to the individual is proportionately small. Moreover, owing to the surrounding circumstances, the amount of natural heat units given off by the body is increased by the excitement of debate, etc. It is, therefore, essential that a perfect system of ventilation be installed. The OZONAIR SYSTEM ensures a perfectly pure and invigorating atmosphere without draughts.

Theatres, Concert Halls, Picture Palaces, Ball Rooms, Etc.—The difficulty of ventilating a crowded place without producing draughts is now solved. Nothing is more detrimental to health and enjoyment than sitting in an overheated, over-humidified and fetid atmosphere. The number of persons who lay the foundation of serious illness or disease in these circumstances cannot be over-estimated. The best atmosphere is found in those places of entertainment which are provided with the OZONAIR SYSTEM of Ventilation. A well ventilated place of amusement is a commercial asset and is in itself a striking advertisement.

Places of Worship—The popular idea of the cause of sleepiness in these buildings is more often than not a gross slander on the reader of the sermon. It is a notorious fact that the air of such buildings is very often entirely free of the essential features of a healthy atmosphere. Added to this, a crowd of human beings in a confined space, and all the worst conditions for proper respiration, are present. It is, therefore, no wonder that many of the congregation should be overcome by drowsiness, or that places of worship are frequently hotbeds for the dissemination of disease. The remedy is a simple one, namely, to provide a perfect system of ventilation.

Schools, Colleges, Etc.—One of the most, if not the most important point in these buildings is the purity of the air; yet, more often than not, this is overlooked, and the health of the pupils and teachers is seldom considered or even realised. The open window is not ventilation for such places as these. Under certain conditions of the weather or temperature the open window is no doubt ideal, but as an average it may be maintained that the closed window is of less harmful consequences than the open one. It is true that a good system of ventilation with proper temperature control costs more than the opening of the window, but surely the health of the future generation is at least of equal importance to its education. It must be apparent that a child or person in good health and in a healthy atmosphere will learn more easily and with less strain on the mind and body than otherwise.

Banks, Insurance Companies, Offices, Etc.—A healthful atmosphere tends to better work both in quality and quantity, with less mental and physical fatigue, and, therefore, greater contentment. Cleanliness of the air in an office is a very desirable feature. Money spent on good ventilation is a safe investment, yielding good and regular returns.
Retail Establishments, Large Stores, Etc.—Apart from the ordinary advantages of a well-ventilated establishment, such an attribute is a standing advertisement and attraction to the shopping public. Not only are the assistants able to work without undue fatigue or injury to health, but the stock, especially such articles as lace, etc., benefits by exposure in a clean atmosphere.

Factories, Workrooms, Etc.—Although certain regulations in regard to cubic contents are laid down by the Home Office, the conditions obtaining in places of this kind are not always congenial or healthy to the workpeople. In many places, the odours emanating from the goods or materials being worked, combined with emanations from the operatives, produce an unpleasant effect which the regulation quantity of cubic space will not affect. The result tends to produce lassitude and anaemia, due to slow poisoning from impure air, but if fresh air were introduced from outside and ozonised, the great tonic and purifying effects will make the air pleasant and healthy and produce increased physical energy and mental activity of the employees. A small initial expenditure in good ventilation will be repaid very quickly. The combined Heating and Ventilating unit system, described on page 12, offers an inexpensive and simple solution to what may sometimes seem a difficult and costly proposition.

Hospitals, Asylums, Etc.—These institutions, situated as they often are in the centre of busy cities, are sadly in need of scientific ventilation. The need of a clean atmosphere in surgical cases is known to every surgeon. In the case of hospitals for certain specific diseases, such as cancer, etc., the use of ozonised air has a value far beyond its ordinary ventilation use. For many diseases Ozone has a specific value.

Hotels and Restaurants—The public rooms of these places are more often than not close and ill ventilated, and the dining rooms redolent of the kitchen department. Nothing is more apt to spoil the appetite than a close or food-smelling room. There are no cooking smells in Restaurants fitted with OZONEAIR Ventilation.

Ships, Railway Coaches, Etc.—The ventilation of ships is always a difficult proposition. Owing to the small cubic space at disposal, and the low ceiling, it is almost impossible in the ordinary way to prevent draughts if anything like the usual change of air is attempted. Ozone ventilation is, therefore, peculiarly adapted for use in all parts of Ships and Railway Dining Cars, etc. It also deals effectively with the peculiar, and to some people disagreeable, odours found in these places. For the private cabin nothing can be more delightful than an OZONEAIR Fan. In the case of Mountain Railways, Ozone is found to be a valuable specific for heart weakness caused by the high altitudes to which these ascend.

Warehouses, Cellars, Wine Vaults, Etc.—These places, as much as the more frequented buildings, require change or purification of the air. Many cases of deterioration of stored goods occur, where large sums are lost, due entirely to a close and fetid atmosphere. This breeds moulds and other things destructive to all kinds of articles. An Ozonair Ventilating Plant will often pay its cost in a few months, quite apart from the question of Hygiene.
Picture Theatre Ventilation

Showing arrangement of Plant and alternative methods of distribution

Diagram showing method of fitting Osmotic Ventilating System without the use of Metal Air Ducts, etc. By this means a considerable saving in first cost is effected.

Basement Plan showing Ductwork and Air Distributing Shafts constructed in concrete.
List of Some Important Installations

GOVERNMENT BUILDINGS.
LONDON: House of Commons.
Lax Courts.
Ministry of Munitions.
GLASGOW: Justiciary Courts.

MUNICIPAL AND PUBLIC BUILDINGS.
LONDON: Town Hall, Bermondsey.
Metropolitan Asylums Board.
Underground Conveniences, Bank.
BLACKBURN: Public Halls.
Sessional Court.
Town Hall.
BRADFORD: Electricity Works.
Sewage Works.
SWANSEA: Guildhall.
*EVANS-LES-BAINS: Casino Municipal.
*NUREMBERG: Zoological Gardens.
*TROUVILLE: Casino Municipal.
SYDNEY, N.S.W.: Sewage Department.

STEAMSHIPS, ETC.
Orient Steam Navigation Company.
The Union S.S. Co., New Zealand.
The Argentine Navy.
The German Navy.
The Italian Navy.
The Japanese Navy.

RAILWAYS.
Baker Street and Waterloo.
Central London.
Charing Cross and Hampstead.
South Eastern and Chatham.

HOTELS, RESTAURANTS, ETC.
LONDON: Cranston's Hotel.
Imperial Hotel.
Piccadilly Hotel.
Savoy Hotel.
Strand Palace Hotel.
Chinese Restaurant, Oxford Street.
J.P. Restaurant.
Murray's Club.
NEWCASTLE-ON-TYNE: Tilleys Banqueting Hall.
GLASGOW: Cranston's Tea Rooms (3 Installations).
*COLOGNE: Café Palant.
*Gürzenich-Bräu Restaurant.
*GLION: Bellevue Hotel.
*LUCERNE: Hotel de Fams.
*Hotel Société Immobilière.
*LES AVANTS: Hotel Grand.
*Hotel des Sports.
*LUCERNE: Hotel Mireva.
*Hotel Waldsträfthof.
*PARIS: Hotel Ritz.
*Hotel Murica.
*RHINELDEN: Hotel Dietzchy.
*ZURICH: Hotel Central.

THEATRES, ETC.
LONDON: His Majesty's Theatre.
Palace Theatre of Varieties.
The Palladium.
The Lyceum.
Victory Cinema, Bloomsbury.
Wigmore Hall.
BRADFORD: The Picture Theatre.
GLASGOW: Cranston's Picture House.
The Picture House.
LIVERPOOL: Palais de Luxe Cinema.
MANCHESTER: Deansgate Picture House.
NEWCASTLE-ON-TYNE: The Empire Cinema.
Picture Theatre Westgate Road.

*BALE: Kichlin Theatre.

INSTITUTIONS, BANKS AND INSURANCE CO'S, ETC.
LONDON: Lloyd's Royal Exchange.
British Red Cross.
Wool Exchange.
Polytechnic.
Normal School of Physical Culture.
Excess Insurance Co.
North British and Mercantile Insurance Co.
Banca Commerciale Italiana.
Hong Kong and Shanghai Bank.
London City and Midland Bank.

BIRMINGHAM: The Exchange.
EDINBURGH: Commercial Bank of Scotland.
Edinburgh Life Assurance Co.
School of Cookery.
Scottish Provident Institution.

LEITH: The Academy.

SAINT HELENS: The Birkington Hospital.
*METZ: Banque Crédit Coopératif.

MILAN: Buca Commerciale.

BUSINESS HOUSES, FACTORIES, ETC.
LONDON: Debenhams Ltd.
D. H. Evans & Co. Ltd.
Derry & Toms.
Harrisons & Crosfield Ltd.
Pyne Bros.
Glass Bevils & Co.
Glassworks Ltd.
Huntley & Palmer Ltd.
London General Omnibus Co. Ltd.
Harrods.
W. Parnell & Co.
The New Telephone Mfg. Co. Ltd.

GLASGOW: Malcolm Inglis & Co.

EDINBURGH: Chas. Jenner & Co.

LUTON: Geo. Kent Ltd.

MANCHESTER: Hugon & Co. Ltd.
Malter & Platt Ltd.

READING: Huntley & Palmer Ltd.

BUENOS AIRES: Harrods Store.
Gath & Chaves Stores.

*PARIS: Le Figaro Offices.

* These installations were carried out by our various European Agents.
SOME OZONAIR INSTALLATIONS

Houses of Parliament, London

Edinburgh Life Assurance Buildings, Edinburgh

Law Courts, London

Commercial Bank of Scotland, Glasgow

Guildhall, Swansea
SOME OZONAIR INSTALLATIONS

Salle du Cercle, Municipal Casino, Evian-les-Bains

Savoy Hotel, London

Café Palau, Cologne

Imperial Hotel, London

Tiley's Assembly Rooms, Newcastle-on-Tyne
SOME OZONAIR INSTALLATIONS

Debenham & Freebody, London

Chr. Jenner & Co., Edinburgh

Malcolm Inglis & Co., Glasgow

Pyne Bros., London

SOME OZONAIR INSTALLATIONS

His Majesty's Theatre, London

The Palladium, London

Palace Theatre of Varieties, London

Küchlin Theatre, Basel

Municipal Casino, Trouville
SOME OZONAIR INSTALLATIONS

Royal Exchange (Lloyd's), London

Gaith & Chaves, Buenos Aires

Public Hall, Blackburn

Sessions Court, Blackburn

Harrod's, Buenos Aires
SOME OZONAIR INSTALLATIONS

The Picture House, Leeds

Grosvenor's Tea Rooms, Glasgow

The Polytechnic, London

Harrisons & Crosfield's Office Buildings, London

Coode Street Station, Charing Cross and Hampstead Railway
Terms and Conditions

**Prices** in this list are net, are for cash, and are subject to alteration without notice. Apparatus is stocked for ordinary standard voltages, which are 220-250 and 110-120 volts. The standard periodicities for Alternating Current are 40 to 100 periods per second. Variations from these standards involve an extra charge of 10 per cent.

**Foreign and Colonial Orders** should be given through an established shipping firm in England, or arrangement made for payment in London on presentation of shipping documents.

**Packing** is charged for, but cases will be allowed for in full if returned within a reasonable time and carriage paid in good condition, with the packing material intact. Packing for export, etc., 5 per cent. extra.

**Damage in Transit.** Goods are packed with the utmost care, and the Company does not hold itself responsible for loss or damage in transit. Should such occur, claim should be at once made on the carriers. It is always advisable to sign for goods, “Not Examined.”

**Guarantee** is hereby given for all apparatus supplied by the Company, who will repair or replace any article which develops a fault due to defective material or workmanship, if such article be returned carriage paid within six months of purchase.

**Illustrations,** Dimensions and Weights are not to be considered as binding. Improvements in detail are constantly being made, and the latest type of instrument will be supplied.

The Company’s completely equipped **Electrical and Chemical Laboratory,** together with the services of the entire staff of highly trained technical officers, are always at the disposal of clients; and anyone desiring information in connection with the application of Ozone in any direction is invited to communicate with the Company, who will do its utmost to meet the wants of clients.

**Warning.** Owing to the success of the Company’s manufactures, numerous persons have attempted to copy the design and principle of their apparatus, each of which is covered by numerous Letters Patent. Notice is hereby given that all persons so offending, whether they be makers or only users of such infringing apparatus, will be held liable to the Company for damages, and this Company takes the present opportunity of warning the public against purchasing any apparatus which appears to be like that described in this catalogue without first ascertaining that such articles are free of infringement of this Company’s Patents.

The following additional Literature relating to other applications of Ozonair Apparatus will be sent on request:

1. Ozonair Apparatus for General Purposes
2. Ozonair Apparatus for Laboratory and Research Work
3. The Ozonair System of Water Purification
4. All about Ozonair
5. Ozonair on the Central London Railway
6. Ozonair in the Therapeutic
7. Ozonair in Therapeutics
8. The Ozonair System of Food Preservation
9. Ozonair in Brewing
10. The Ozonair System of Bleaching
11. The Ozonair System of Desinfection
CENTRAL LONDON (TUBE) RLY

The most enjoyable form of travelling in London.
EVERY TRIP INVIGORATES YOU

FATHER NEPTUNE BLOWS 80 MILLION CUBIC FEET OF OZONE THROUGH THE TUBE DAILY
OZONAIR

Apparatus for General Purposes

OZONE

IN VENTILATION

Heating Plant Economy by Recirculation

Ozone Pure Airifier Co.
1455-57 W. Congress Street
Chicago
OZONAIR LTD.
ST. LEONARD STREET
LONDON, SW.1

Air Purification and
Deodourisation

PREVENTION OF NUISANCE
from Smells and Foul Odours
KITCHEN AND OTHER SMELLS
DESTROYED

AIR TREATMENT
for Ventilation and all Industrial Applications

PURE AIR PLANT
For Breweries,
Food Factories,
Hospitals, etc.

Air Cleaning by THE VENTEX FILTER

FOOD PRESERVATION
and all other applications of Ozone by

OZONAIR APPARATUS

TELEPHONE - VICTORIA 0012

The
VENTEX
AIR FILTER

efficient air cleaning
ensures greater working efficiency and reduced plant
maintenance costs. The installation of Ventex
Air Filters ensures EFFICIENT AIR
CLEANING. Air filtration plant
specially designed for—

- GENERAL VENTILATION
- AIR-CONDITIONING PLANTS
- PLAFOND HEATING SYSTEMS
- UNIT HEATERS
- COOLING OF
- ELECTRICAL EQUIPMENT
- AIR COMPRESSORS
- DIESEL ENGINES
- PAINT SPRAYING PLANT
- BACTERIA CONTROL
- ELECTRIC AND
- DIESEL LOCOMOTIVES
- SHIPS VENTILATION
- PHOTOGRAPHIC PRODUCTIONS

Illustrated is
a Ventex Self-Cleaning
Type Air Filter

OZONAIR LIMITED
OZONAIR WORKS THE ESPLANADE ROCHESTER KENT TEL. CHATHAM 4501 (3 lines)
SELF CLEANING VENTEX AIR FILTER

The Self Cleaning Ventex Air Filter is built in panel formation and may be constructed to any capacity. It is readily adaptable in size and may be constructed to any dimensions to comply with site conditions. The cleaning operation is carried out by a separate combined fluid pump strainer unit circulating oil for ten minutes down the panels, cleansing them of the accumulated dirt and leaving them ready for a further period of operation. The filter is electrically operated and may be made fully automatic by the use of a time clock and electrically operated valves.

The Self Cleaning Ventex Air Filter provides an efficient and mechanically reliable atmospheric air filter.

CAPACITIES—RESISTANCE—SIZE TABLES FOR THE AUTOMATIC SELF CLEANING VENTEX AIR FILTER, USING THE FULL THICKNESS FILTERING MEDIA FOR MAXIMUM EFFICIENCY

<table>
<thead>
<tr>
<th>Height of Filter (H)</th>
<th>Panel Width W—2' 6&quot;</th>
<th>Panel Width W—3' 0&quot;</th>
<th>Panel Width W—4' 0&quot;</th>
<th>Panel Width W—6' 0&quot;</th>
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<td>W.G. 20&quot;</td>
<td>W.G. 25&quot;</td>
<td>W.G. 30&quot;</td>
<td>W.G. 40&quot;</td>
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<td>W.G. 40&quot;</td>
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<td>5840</td>
<td>6730</td>
<td>7700</td>
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<td>W.G. 20&quot;</td>
<td>W.G. 25&quot;</td>
<td>W.G. 30&quot;</td>
<td>W.G. 40&quot;</td>
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<tr>
<td>8' 6&quot;</td>
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<td>7500</td>
<td>8270</td>
<td>9450</td>
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<tr>
<td></td>
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<td>W.G. 25&quot;</td>
<td>W.G. 30&quot;</td>
<td>W.G. 40&quot;</td>
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<td>10' 0&quot;</td>
<td>8250</td>
<td>9200</td>
<td>11150</td>
<td>19500</td>
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<td>W.G. 25&quot;</td>
<td>W.G. 30&quot;</td>
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<td>11400</td>
<td>13900</td>
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<td>10750</td>
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<td>11000</td>
<td>15100</td>
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<td>15800</td>
<td>18100</td>
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<td>25800</td>
<td>28700</td>
<td>31620</td>
<td>36000</td>
</tr>
</tbody>
</table>
The Ventex Air Filter consists of an outer frame containing a removable inner frame capable of use as a single or multiple unit of any capacity and shape for fixing according to site requirements.

The Ventex Air Filter incorporates all the features to ensure efficient filtration. These features include:

1. Largest possible area of viscous cleaning surface to face area of filter.
   Each Standard Ventex Air Filter Unit contains 77 sq. ft. of filtering or cleaning surface or forty-six times its face area.

2. The filtering element formation provides the most efficient retention of dust particles whilst retaining the adhesive coating even at high velocities.

3. Rigid fixing and immovability of the filtering elements within the supporting frame.

4. Freedom from choking due to constant water gauge during the operating period.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>CAPACITIES (C.F.M)</th>
<th>DIMENSIONS IN INCHES</th>
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</thead>
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<td>A  B  C  D  E  F  G  H  I  J  K</td>
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<tr>
<td>HALF  M</td>
<td>157 202 250 200 300 300 300 400 400 400 400</td>
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<tr>
<td>FULL</td>
<td>140 162 150 200 225 340</td>
<td></td>
</tr>
<tr>
<td>HALF</td>
<td>140 157 202 250 200 292 340</td>
<td></td>
</tr>
<tr>
<td>FULL</td>
<td>140 162 150 200 375 448</td>
<td></td>
</tr>
<tr>
<td>HALF  H</td>
<td>315 405 460 522 585 675</td>
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<tr>
<td>FULL</td>
<td>250 325 360 400 450 495</td>
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<tr>
<td>HALF  H</td>
<td>472 608 690 783 890 1095</td>
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<tr>
<td>FULL</td>
<td>410 510 540 600 765 750</td>
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</tr>
<tr>
<td>HALF</td>
<td>620 800 900 1040 1150 1450</td>
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<tr>
<td>FULL</td>
<td>540 670 700 800 900 1000</td>
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</tr>
<tr>
<td>HALF</td>
<td>750 940 1070 1240 1570 1970</td>
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<tr>
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<td>650 750 940 1070 1240 1570</td>
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</tr>
<tr>
<td>HALF</td>
<td>850 1000 1250 1400 1580 1830</td>
<td></td>
</tr>
<tr>
<td>FULL</td>
<td>750 950 970 1100 1200 1550</td>
<td></td>
</tr>
</tbody>
</table>
Continuous Cleaning Ventex Air Filter

Characteristic Features

1. Effective Exposed Surface
   The area of cleaning surface exposed to the air flow is forty-five times the face area.

2. Efficient Dust Retention
   The formation of the filtering elements provide the most efficient retention of the dust particle.

3. No Fluid Carry Over
   The patented design of the elements coupled with special method of screened flooding gives complete freedom from fluid carry over.

4. Self-Contained Unit Construction
   The filter is constructed in unit panels, being self-contained and readily adapted to suit any capacity.

5. Static Filter Elements
   The elements are immovable and rigidly held in panel formation and not subject to movement and mechanical wear.

6. Vigorous Cleaning
   The cleaning fluid is caused to flow down the filtering elements at a very high rate of flow, providing the most vigorous cleaning action and ensuring complete cleansing.
Nothing like the whole story...

of the Ozonair range of heating, ventilating, air-conditioning and air-filtration units and systems—but a few examples from it are shown on succeeding pages, singly and in combination.
The range is exceptionally comprehensive; it is continuously being developed to meet tomorrow's needs as well as today's—and it is backed by co-ordinated design and manufacture, extensive research and development, and skilled advisory and after-sales services.

now read on
Quality... with peak efficiency... heat transfer...

OZONAIR

of course

In every application—electric, hot water, or steam for heating; chilled water, brine or direct expansion for cooling... plus air cooling with controlled humidification by spray coils—TRANSHEAT heat transfer coils do their job supremely well.

TRANSHEAT spray coil unit (sectional view)

For the ins and outs of industrial air conditioning...

OZONAIR

of course

Efficient air-exhaust systems in factories and workshops are essential for health and safety. They remove the undesirable air-contaminating products of modern industrial processes, reduce combustion hazards, maintain comfortable working conditions... and improve productivity.

In innumerable industrial plants and commercial buildings OZONAIR’s Power Roof Ventilators have long been proving their exceptional efficiency in handling exhaust air.

To replace the exhausted air, clean fresh air must be brought in. This make-up air must be heated through most of the year.

The new Ozonair Kensington/Nelson Direct Gas-Fired Make-up Air Heating and Ventilating Units—approved by the GAS COUNCIL—are designed to do this job effectively, safely, and economically.

The new Kennard/Nelson DGFH unit
The TOTAL answer to air distribution . . .

OZONAIR
of course

Long acknowledged for their high quality and supreme efficiency, Kno-Draft air diffusers with the introduction of the Multi-Pattern Series AKS now cover a complete line concept of air distribution equipment.

Series AKS
standard square and rectangular

Type KLSE linear

Type GPL for modular lighting fittings

Type KDA circular

Type KDBH circular

Type KLC linear

For EVERY clean-air problem . . .

OZONAIR
of course

Ozonair produces one of the finest and most comprehensive ranges of air filters, with units for every type of air-conditioning, ventilating, and particulate-control application.

Also:
VENTEX : DEDUST :
OZOTEX :
DRY METAL WOOL :
VENTEX GREASE :
DOREX ACTIVATED CARBON

Cambridge Absolute

Cambridge Hi-Flo

Continuous cleaning Ventex

'S'-Mat
For air-handling efficiency from start to finish . . .

**Ozonair**
of course

Kennard/Nelson packaged central station air-handling units include lig centrifugal fans—because they are the best for supply-air requirements.
To ensure the utmost efficiency from start to finish specify lig Util-A-Set packaged fan motor and drive unit for exhaust air—the perfect partnership. Kennard/Nelson-lig mean total compatibility through co-ordinated design and manufacture.

---

For clean area efficiency . . .

**Ozonair**
of course

For the highest clean area efficiency combine the ‘S’-Mat automatic fabric air filter with Cambridge ‘Hi-Flo’ high efficiency Aerosolve filter.

---

**Hi-Flo**
high efficiency Aerosolve filter

---

**Ozonair Engineering Company Limited**
Technical Sales & Engineering Office
Aylesford, Maidstone, Kent. Telephone: OMAA 77861. Telex: 96284
- Technical representatives and service engineers in all areas
- On Site testing service with Royco automatic dust particle counter

46
THE Hi-jet INDUCTION SYSTEM

Concealed or free-standing units of under-window or high level ceiling type are available.

ADVANTAGES
- Considerable space savings.
- Economical in operation.
- Reduced fan horsepower.
- Individual room control available.
- Low operating noise level.
- Particularly suitable for modular building layouts.
- Adaptable to changes in internal building partitions.

1961 (Brightside)
BP Head Office, London, air conditioned with 3500 Hi-jet units (Brightside)

REFERENCES AND SOURCES OF ILLUSTRATIONS

1921 *Ozonair System of Pure Air Ventilation*, brochure published by the Company

1955, 1959, 1971 *IHVE Guides*

1961 *Brightside High Velocity Heating & Air Conditioning Systems*

1965 *Brightside Air Conditioning*