Hence we deduce that, whatever the degree of approximation to which the point distribution in Fig. 1 represents the vector diagram of insulin, to that same degree of approximation the corresponding atomic distribution in crystalline insulin is represented by Fig. 1a (broken circle = c appears at the centre and at each corner of the hexagon).

This procedure is further explained and developed in general in more detailed studies in course of publication. It is also being used to derive from the vector diagrams of insulin further and more detailed information regarding the atomic structure of crystalline insulin in investigations which may be regarded as supplementary to those already published^{2,5}, which have shown the delicate concordance between these diagrams and the vector map of the cage structure predicted for insulin⁶ as a deduction from the cyclol hypothesis⁷.

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Ionization of Air in an Air-conditioned Building

ACCORDING to modern medicine, the electric condition of atmosphere is an important sanitary factor. In closed localities ventilated normally, man lives in a medium which has not the electric field of open air, but the average ionization of its air is, as a rule, the same as in the open air. There is normally also a slight excess of positive ions over negative ions, as out of doors. Cellars, where the air stagnates and where there is accumulation of radon (radium emanation) released from the walls, are an exception.

It was, therefore, interesting to ascertain the order of ionization of air inside buildings provided with Carrier air-conditioning equipment.

This equipment consists, in principle, of filters (viscous layers, glass or steel wool, etc.) or electric precipitators and air washers freeing the air from dust, and adjusting its humidity and temperature. It might be expected that the air is simultaneously freed also from its ions, which may be regenerated in the cleaned air only by the influence of radioactive radiation of the walls and other articles placed in the building, or by cosmic rays.

We had the opportunity of measuring ionization of air in the central office building of the municipal electricity works of the city of Prague. The central air-conditioning equipment, described by one of us¹, consists of the main filters, having a total surface of 48 sq. metres, after which the air passes through a chamber where it is washed with water. After being heated suitably, to adjust the humidity and temperature, the conditioned air is led through the main duct to the individual stories. It passes there through the local machines, where it is mixed with the return air cleaned by local filters. From the machine rooms, the air is guided in metal air ducts and inlets with grids, into the working rooms. The ducts are provided with silencers made of

'Celotex' and 'Tritex' to reduce sound. The amount of air drawn in per hour from the open atmosphere is 60,000 cub. metres minimum, 200,000 cub. metres maximum.

The content of small ions was measured by a compensating ion counter of special design² giving directly the number of small ions in 1 c.c.

The results are given in the accompanying table, where n^+ and n^- are the number of small ions in 1 c.c. of air, q is polarity of spatial charge. The average temperature of the conditioned air was 19°C., relative humidity 62 per cent, except measurement No. 2, when the temperature of air was 12.3°C. and relative humidity 89 per cent.

Place	n^+	n^-	$q = \frac{n^+}{n^-}$
1. Outside air (open atmosphere)	300	260	1.15
2. Pit immediately behind the air washer	530	10,600	0.05
3. In the main duct for conditioned air, 1st floor	640	5,300	0.121
4. Ditto, 4th floor	550	4,650	0.118
5. Air inlet into the working room	200	1,900	0.105
6. Close to the wall of the working room 70 cm. above the floor	760	330	2.30
7. In the middle of the working room	775	895	0.866

Measurement No. 2 shows that the air is not freed from ions even after it passes through filters and is washed with water. There is an enormous excess of negative ions, forty times more than in the open air, which is evidently the Lenard effect, that is, separation of negative charges on breaking up water drops. A considerable excess of negative ions over the positive ones is maintained in the main duct for conditioned air up to the 4th floor, at an average speed of air of 195 metres per minute. The radioactive radiation of material of the walls and articles renews quickly (in about 10–15 minutes) the balance between the positive and negative ions. The walls tend to eliminate the negative ions, the mobility of which is greater than that of the positive ions, so that they are more absorbed on objects (see measurement No. 6). The average ionization ascertained in the working rooms, in the corridors and in the hall was twice as high as in the open air, the air showing as a rule a slight excess of negative ions over positive ions, that is, inverted polarity as against the normal polarity of open air. Permanently increased ionization of air in an air-conditioned building may have a certain physiological influence. It resembles a mountain climate, which is characterized always by a greater ionization than that of the lowlands.

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Velocity of Sound in Liquid Helium

BURTON and others¹ have measured the velocity of ultra-sonic waves in liquid helium under its own vapour pressure, and compared the results with the thermodynamic properties of the substance. In the helium I range they derive an adiabatic compressibility, which shows a minimum at 2.5° K. In order to find the