POLLUTION OF THE CITY AIR AS A SOURCE OF NOSE AND THROAT DISTURBANCE

CITY planning for the control of air pollution represents not only a wholesome regard for the comfort of its citizens, but also one of the largest steps forward in the protection of its inhabitants against an alarming degree of upper respiratory diseases. Sinusitis and its many complications is closely related to air pollution.

The air we breathe is food for the body of the same chemical value as sugar—but more vital in form. Air polluted with sulfurous gases from chimneys and smoke stacks is equivalent to the forced eating of spoiled foods. That city planning should concern itself with air pollution is as vital as dealing with milk contamination.

The adult person inhales with every breath one half of a liter of air, that is, approximately one pint. In one minute, with about 16 respirations, 8 liters of air are inhaled, and in one hour 480 liters of air. About 10,000 liters of air pass into the lungs during the day. The principal constituent of air is, of course, the oxygen—so essential to life.

The non-respirable gases are both normally occurring, such as carbon dioxide, ammonia and nitrogen acids and the pollutions—chiefly sulfurous gases from chimneys and smoke-stacks. Among these latter gases —sulfurous gases are most common. In addition to these gases, there are a number of other poisonous gases poured from the smoke-stacks of industrial plants and incinerators. Among these may be mentioned hydrochloric acid, chlorine, hydrofluoric acid. In the etching of metals, large quantities of dense fumes of the oxides of nitrogen pass into the air. Ice factories allow large amounts of ammonia to escape into the air. Other gases occurring industrially are hydrogen sulfide, carbon disulfide and carbon monoxide. This latter is probably our most dangerous automobile contribution. Formaldehyde is one of the products of wood combustion in rubbish incineration and is a serious source of irritation to those living within the district of such plants. Gases generated in the neighborhood of high explosive blasting are chiefly carbon monoxide, nitrogen oxides, hydrocyanic acid and hydrogen sulfide. The inhalation of these gases alone, in confined places, has frequently caused the untimely death of working men.

The source of the oxygen by which we live is the result of plant life. Without chlorophyll and the actinic rays of the sun our atmosphere would soon become dead and non-respirable. The plant breaks up the exhaled carbon dioxide by separating the oxygen and fixing the carbon. This freed oxygen is thus restored to the atmosphere. It becomes apparent, therefore, that plant life must be fostered to make human existence favorable.

The influence of air pollution is readily seen in some sections of our city streets where plant life is difficult to maintain. Plants are more susceptible than human beings to the action of gases. Quantities of sulfurous acids as minute as 0.01 of one per cent. is definitely deleterious. Bad as the chemical pollution of the air may be, it is equalled by the smoke dust. In the summer, when vegetation and climatic conditions are mitigating factors, the danger of air pollution is not so great, but with the onset of winter, when meteorological conditions are unfavorable, with increased moisture in the air, diminished air currents and lowered temperature, fogs develop, especially in the morning. With air currents still, defective atmospheric ventilation follows and stagnation results. In some instances the gases collect in low streets, where they remain until they are removed by winds. The mechanism of fog is also interesting. The factors producing it are—first, the super-saturation of the air with aqueous vapor; second, the presence of dust as in the form of soot necessary for condensation; third, a reduction of temperature and fourth, defective atmospheric ventilation. When all these factors are present we find the appearance of fog.

What now are the effects of these conditions? The respiratory mucous membrane reacts promptly to all noxious influences. The nasal membranes fluctuate continuously in volume, tending to enlarge when irritated or under deficient oxygenation. There is a stimulation of the para-sympathetic secretory fibers in nature's effort to wash away from the membrane the irritating substances. The prolonged irritation of this character, associated with nasal obstruction and diminished ventilation of the nasal sinuses, creates the conditions favoring bacterial infection with the ensuing susceptibility to colds and sinus infections. Patients will thus repeatedly state that they were careful to avoid undue exposure or chilling; in fact they stayed at home but, nevertheless, caught cold. These patients frequently are the victims of air pollution, and neither vitamins nor bundling will help—rather, what they need is clean air. These patients promptly improve on going to a cleaner zone. Many persons suffering from nasal congestion, sneezing and watery nasal discharge, resembling allergic so-called hay fever states, showing no sensitiveness to proteins after exhaustive tests, clear up promptly on going to country districts or higher altitudes. These patients may be considered among those suffering from air pollution.

The uncontrolled pollution of city air brings in its wake the products of civilization—colds and sinusitis, with its more serious ear complications. The failure

to regulate the site of industrial plants is as great a menace to the city as the uncontrolled destruction of forest and farm lands, in the Middle West. The dust storms making large tracts uninhabitable may be equalled by the city fogs and pollution making cities undesirable for living purposes.

City planning is important for the prevention of sinusitis. The use of medication to shrink nasal membranes, engorged by unhealthy atmospheric conditions, is—in many instances—a short-sighted approach to the problem.

City planning must regulate the location and number of smoke-stacks per square mile and the volume of gases expelled. Large industrial smoke-stacks and incinerators must be placed well outside of the city limits. The unnecessary burning of city garbage should be replaced by the more scientific method of bacterial decomposition and conversion to fertilizer. The creation of a fixed ratio of park area for each industrial zone would mitigate the present unhealthy status. The daily examination of all city zones to determine air purity and its regulation should be conducted along lines similar to milk contamination inspection. Controlling the number of gasoline consuming automobiles and encouraging the use of electric automotive trucks and buses would materially aid in restricting air pollution. Thus upper respiratory diseases, particularly sinusitis, is a problem of city planning as well as nasal medication.

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SEXUAL DIMORPHISM OF HYMENOPTEROUS EGGS AND LARVAE

RECENT studies on the biology of *Coccophagus lycimnia*, a parasite of lecaniine scales, have shown that the form of the eggs that develop into males differs in shape from those that develop into females. The differentiation occurs during oviposition.

The female egg is of the usual type. It is elongate, slightly arcuate and floats freely in the body fluids of the host. The male egg, on the other hand, is ovate with a pedicel at one end. It is fastened firmly to the external surface of the host by means of the pedicel which is embedded in the host's tissues. The embryo develops with its cephalic extremity towards the pedicel. The male egg is sometimes deposited free in the space surrounding the host.

This phenomenon is known to occur in another species of *Coccophagus*. It may also occur in a species of *Tetrastichus* parasitic on the eggs of *Malacosoma americanum*. L. T. Williams reported in *Psyche* (vol. 23, page 153) that *Tetrastichus* frequently deposited stalked eggs on the wall of a test-tube.

In the first and second larval instars many species of *Coccophagus* and related genera exhibit striking sexually dimorphic characters. *Coccophagus lycimnia* females lack spiracles when in the first and second instars. *C. lycimnia* males possess four pairs of spiracles in the first instar and six pairs or more in the second instar. When in the first instar the male larva of *Coccophagus capensis* is hairy in appearance and the female larva is smooth. The male larva of *Coccophagus gurneyi* is a planidium covered with chitinous plates and possessing ambulatory spines and two pairs of spiracles. None of these structures occur in the female.

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COLOR BLINDNESS IN TURKEY

WITH the cooperation of a graduate student, Olive W. Evans, we are able to give some data on the incidence of color blindness among Turkish children in the schools of Istanbul, Turkey. By means of the Ishihara Color Blindness Test 384 children were tested in the grades from kindergarten to the seventh, and 306 students in Robert College, making in all 690 tested. Of these, 473 were males and 217 females, and all were Turks. The results are offered in the following tabulation:

	No. Turks tested	No. color blind	Per cent.
Males	473	24	5.3
Females	217	0	0.0

Each eye was tested at a time and there was no case of monocular color blindness. The twenty-four color blind males were red-green blind.

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SCIENTIFIC BOOKS

A SURVEY OF FEELING AND EMOTION

Psychology of Feeling and Emotion. By CHRISTIAN A. RUCKMICK. McGraw Hill Book Company, N. Y. 515 pp. 1936.

IT is a longer distance in treatment than even in time between this survey of Professor Ruckmick's and Ribot's "Psychology of the Emotions" of forty years ago; and there has been nothing as comprehensive since. The march of time and the march of ideas do not always proceed apace. Within these four decades, there have been decisive shifts of fronts all along the line of psychological advance, and notably, though by