

CITY DUST—CAUSE AND EFFECT.

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This paper is in line with one read a year ago on "Cold and Colds" and is really a continuation of the same subject. The influence of dust on the health of man is, however, such a vast one that in a brief paper like this only one or two phases can be taken up.

In a general way we can say that dust is a product and an accompaniment of civilization. There are of course special kinds of dust with whose production man has nothing to do, such as the dust of sandy deserts, volcanic dust, and the dust arising along the trails of animals going to salt licks, etc., but in a general way the terms dust and man go together. Dust is solid matter in a state of fine division, so fine that it can be wafted or blown about by the wind. Among primitive people there is little dust, their mode of life forbids its formation and their nomadic or out of door existence prevents its accumulation.

Paradoxical as it may seem, the amount of dust in a modern city is not an index of a high degree of civilization, no more than is the presence of dirt and filth or its accumulation in a house an index of a high social standing of a family.

In a general way it may be said that accumulation of dust in a city is the result of the ignorance of common sanitary laws, of apathy on the part of the citizens, and of bad politics in those having the management of municipal affairs. A housewife who allows dust to accumulate is said to be slovenly; a tidy housekeeper is one who gets rid of the dust as soon as possible and does not allow it to accumulate. We have not yet reached a point where we can make similar distinctions between cities—we simply speak of one place being less dirty than another.

Cosmopolitan travelers tell us how clean some people and their cities are and how the streets correspond with the interior of their houses. The Japanese and the Dutch seem to stand at the head of the list, but I have no doubt that in the course of time other nations will reach the same standard of cleanliness, and, I may add, of general health.

Kinds of Dust: Confining ourselves to the kinds of dust due to the activity of man and disregarding special or rare kinds, such as factory dust, for instance, we can in a general way distinguish two kinds.

1. Common country road dust, due to the attrition of solid matter--the hoofs of the horse and the wheels of the vehicle on the road material, the stone or gravel or merely the common dirt. This kind of dust is mixed with only a small amount of other, vegetable, matter, the droppings of horses chiefly. From a sanitary standpoint it is not very objectionable, although it may be so esthetically.

2. City dust, the dust of the sanitarian, the dust par excellence. City dust has a complex composition. Most of it comes from the droppings of horses and originally existed in the form of hay, oats and corn. The fineness of the particles depends on the length of time it remains on the street to be pulverized by traffic. The wear of the street paving material under the horse's hoof and of vehicles adds an appreciable amount; more is added by litter falling from passing wagons, or is brought in from the mud roads adhering to the wheels. Soot, due to the imperfect combustion of coal, lends character to the city dust and in our American cities there is much of it, especially during the cold season of the year. Man himself adds not a little directly: the wear and tear of clothing and the shedding of epidermal scales adds a minute quantity--and much comes from his mouth, in the form of tobacco juice, saliva, and the abnormal secretions due to an unhealthy condition of the mucous membranes. City dust acquires peculiar properties on this account and thus making it differ radically from all other forms of dust.

More might be said on the causation of dust, but much more can be said concerning its influence or effects, and to this I will now turn.

Effects of Dust: The most noticeable effect of city dust is that it makes a city, its houses and inhabitants, look dirty. The dust is blown all about and settles over everything, indoors and out, and the housewife is kept busy trying to keep things looking clean.

There is an old saying about an ill wind that blows nobody good. The laundryman flourishes in a dusty city, clean linen means frequent laundering. The doctor flourishes because dust means sickness and disease. "There is good money in that for me," a physician remarked, as a dense cloud of dust was seen coming down the street. But the individual, par excellence, benefited is the patent medicine man; he flourishes exceedingly in a dusty city and his nostrums are in great demand.

Now this brings up a phase of city life and of the city dust question that is rarely considered. The scientist who has no medical education and no practical experience with ailments and diseases can not

fully realize the importance of the subject, while, on the other hand, the average physician pays too little attention to the scientific but non-medical aspects of it. As a matter of fact most physicians are so disgusted with the subject, and patent medicines are in such bad repute with them, that they think it beneath their dignity to notice it—and so the patent medicine man flourishes unmolested.

But, it will be argued, if the patent medicine man flourishes that is evidence that his wares are in demand; if there were no demand he would not flourish. Of course. The law of demand and supply might be quoted. It might also be said that reading maketh a full man—but that hardly applies to the reader of the patent medicine advertisements in the newspapers.

Consulting the Literature: Every worker in science knows what it means to look up the literature of a subject. "Consulting the literature," is a common expression. Now when it comes to the kind of literature just referred to we need not look far nor long to find it. The very first newspaper or magazine you get hold of will be full of it. Did you ever examine, not to say study, such advertisements? Can it be said of the man who does not and can not read that he is keeping back the progress of his race in its attempts to solve the problems that are constantly arising as man gets farther and farther away from the condition of primitive man? The man who reads patent medicine literature for the purpose of getting valuable or useful information is certainly to be pitied.

In a general way patent medicines and the names of common ailments, not to say diseases, go together; the one presupposes the other. Ailments and diseases fall into groups, likewise do patent medicines and their advertisements. If it can be shown that in some of our dusty cities in which the spitting habit prevails three-fourths of the patent medicines are advertised for ailments directly due to the inhalation of city dust, we at once see the importance of the question of pure and impure air and we dimly realize the effects of the dust.

We all know that life depends on the oxidation of organic substances used as food, enabling us to keep up bodily activities. Oxidation means the use of air. Pure air is an important factor in determining health; very impure air can not sustain life and partially impure air may place the body at a disadvantage in the struggle with its surroundings.

Individually susceptibility to impure air differs widely. When impure air is badly borne and bodily functioning is not carried on normally, we speak of ill-health and disease. Disease may result from the use of bad air, and in a general way, bad air means air contaminated by dust, as already mentioned.

Ailments and diseases have a cause, just like all other phenomena in this world. Some diseases are due to parasites, the preying of one form of life upon another. Some forms of life flourish only at the expense of human beings and are constantly transferred from one person to another. Some diseases and their causes are always among us, such as consumption and malaria; others come and go, as cholera and yellow fever. Some diseases are transferred mainly through the drinking water, as typhoid fever and cholera; other diseases are propagated by the bite of the mosquito, as yellow fever and malaria. Some diseases are transmitted through the agency of dust, and hence we speak of air-borne diseases, like tuberculosis, pneumonia, bronchitis and the like.

Some diseases are well defined and can be readily diagnosed, such as those just mentioned; others are obscure and their causes ill-defined. In a general way it may be said that the names of diseases and ailments in common use are names of ill-defined application, that is, there is nothing definite about them, and they are not used in the best medical literature of today. The words "cold," "biliousness," "catarrh," "rheumatism," and the like, do not express anything definite.

Air-borne diseases like tuberculosis and pneumonia are known as specific diseases due to a definite cause; if the cause is absent then the effect, the disease, will also be absent. Ailments are minor affections and are not always due to some one definite cause: headache or a pain in the arm are ailments and may arise from a variety of causes.

It is scarcely necessary to make any specific reference to the science of bacteriology—which concerns itself with what are popularly known as "germs," or to the number of established facts which it embraces. Anyone arguing in opposition to bacteria as a cause of diseases will not even get a respectful hearing from a qualified bacteriologist—it seems to him a waste of time. A man might as well deny the theory of universal gravitation as to deny the germ theory of disease.

Ailments Due to Infected Dust: Inhaling city dust may bring on a variety of ailments, as well as definite diseases. City residents may complain of various pains and aches during or after the prevalence of a dust

storm or after having been confined to a room or hall with a dusty atmosphere, and country people may complain of not feeling well every time they come from a trip to the dusty city or take a ride on a dusty railway car. Although the effects of inhaling a bad atmosphere or dust differ somewhat in different individuals, yet by observing certain individuals for a long time, and observing a great many now and then, we may be able to draw some conclusions with a reasonable degree of accuracy.

In a general way it may be said that when the air is free from sputum or expectoration, certain ailments and diseases are also absent. The Japanese are remarkably free from ailments that are very common among us: The Japanese do not spit and they also have clean homes. North pole explorers and weather observers on high mountains are free from colds, catarrh, rheumatic aches and pains, bronchitis, and a host of other ailments and diseases—simply because the air is pure and the active causes are absent.

The inhalation of a sputum contaminated air has been found to produce a definite reaction in man. In some individuals a reaction occurs under even a slight exposure, others may require a severe exposure, some may escape entirely. We know that in some of the epidemic diseases there are always some individuals who escape. The reaction due to inhaling infected air or dust, may be characterized about as follows: There is an irritation of the mucous membranes; vague wandering pains or aches throughout the body, mostly referable to the muscles and ligaments, and at times more strongly localized at some point, as in the back or in an arm; there is a feeling of lassitude or discomfort, rising to severe headache, feverishness, loss of appetite and even vomiting. In some individuals there is cough on account of the unusual irritation of the respiratory mucous membranes; some complain mainly of the nervous symptoms and the inability of applying themselves to any task; in some the wandering or localized pains may predominate.

The above symptoms have been grouped together and the name Dust Disease has been applied to them. When, therefore, we say a man has dust disease, we at once have some definite idea of the nature of his ailment, and of its cause.

As a general rule an attack of dust disease declines and disappears of its own accord in the course of a day or a few days, but in a bad atmosphere it may continue for several weeks. Other diseases, like bron-

chitis, tonsillitis and pneumonia or tuberculosis may follow, and we can never be sure that an attack will pass off lightly.

Now if we study the advertisements of patent medicines in the newspapers we will find that they vary in amount, that is in number and size, being most common in the fall and spring and when the dust is at its maximum, and least common in the summer—when the streets are sprinkled and the sputum is sterilized by the hot rays of the sun. We will moreover find that three-fourths of the names of the ailments, not to speak of diseases, mentioned in the newspaper advertisements are simply synonyms of dust disease and are due to the inhalation of dust. I will give a list: cold, hoarseness, throat trouble, sickening breath, foul breath, catarrh, grip, sore throat, tonsillitis, pleurisy, a stitch in the side, backache, kidney complaint, kidney disease, lumbago, stiff back, lame back, rheumatism, muscular rheumatism, a touch of rheumatism, aching joints, headache, sick headache, nervous headache, neuralgia, nervous prostration, the blues, brain fag, neurasthenia, biliousness, bilious fever, a touch of malaria. All of these names should of course be in quotation marks. We find also the terms dizziness, faintness, irritability, restlessness and sleeplessness given as names of ailments, and faceache and ear sickness are mentioned as diseases.

Now I do not mean to say that in every case of ill-health or of sickness, where the above names are applied, the cause is to be traced to the inhalation of infected dust, because something else may be at the bottom of it, but I believe that most cases of such self-diagnosed ailments (and where the afflicted individual calls for an advertised nostrum at the drug store) are simply cases of dust infection. Even stomach and bowel disturbances in many instances come under the same head, that is, caused by the dust—if not by inhalation, then by the dust which settles on food, as the cold victuals of a dusty restaurant or on fruits and vegetables exposed to the dust of the street. As a matter of fact there is a form of dust infection which manifests itself mainly by a disturbance of the gastric mucous membranes, with abundant secretion of mucus and often accompanied by severe vomiting.

Where one symptom, or its location in the body, dominates, it may give character to the ailment and thereby determine its popular name, or its patent medicine name. For instance, if the secretion of mucus or muco-pus is the chief symptom then we have "catarrh;" if the pain in

the back predominates, we hear the words "backache," or "lumbago" or "rheumatism," or even "disease of the kidneys."

One of the peculiarities of the human mind is that the moment a name is given to a thing, to a phenomenon or even a sensation, it is, by many men at least, regarded as a something definite, as an entity. This is especially true in the case of abnormal conditions of the human body. The average man does not regard an ailment simply as a warning from nature that something is wrong and that means should be taken to correct the condition—by removing the cause, but he regards it as an entity that should or must be overcome by an antagonist, an antidote, or in other words a "medicine." Hence a pain calls for a "pain killer" and a cough for a "cough cure." That chronic ill-health and disease may result from such a course is well known to medical men, and that is why they say the more patent medicines the people use the more work there is for the doctors.

With the active cause constantly present, that is infective dust, there are of course many cases of ill-health. Minor ailments make up the great mass of daily complaints of ill-health. There may be simple malaise or lassitude, or well defined aches and pains for which we are not able to account and take them as a matter of course. The relationship between a ride on a dusty street car on the way down town or the confinement to an illy-ventilated, dusty room or an exposure to clouds of street dust, to a subsequent attack of running nose or feverishness, wandering pains and aches or headache or biliousness or loss of appetite, is seldom considered. People have to have their attention called to these things and led to realize that a polluted atmosphere means ill-health and may lead to a well-defined disease.

The Patent Medicine Habit: When a man feels bad he of course wants something to make him feel good or well. Simple means, such as quiet, rest, fasting, good air, may be all that is needed for a day or two to enable nature to bring about a normal condition. But few persons pursue such a course: It is easier to stop in at the drug store and call for one of those widely advertised nostrums guaranteed to "kill the pain" or "stop the cough." Repeated and increased doses may be required, but that does not matter so long as relief follows, and no serious thought is given the matter until nature rebels and a serious disease is the result. Pain in nearly every case is simply a warning that something is wrong,

and a cough in most instances is simply an effort on nature's part to get rid of some irritating material. When we get a particle of food into the windpipe we cough until it comes up, but when the cough is due to the inhalation of a mass of irritating dust particles we (that is, some of us) use a "cough cure."

With the active cause, the infected dust, so plentifully present and with a frequent reaction or effect, that is the presence of an ailment, we have hence another effect: a large variety of nostrums or patent medicines—to counteract the reaction due to inhaling infected dust. In advertising these the long list of names given above is used. Usually some one name is given in large type, followed by several others in smaller type and from time to time there is a shifting, one of the synonyms in the small type will be advanced to head the list. There are several sets of these words or names, depending on the part of the body where the symptoms of the dust infection are mainly localized. If, for instance the pain is mainly in the back, the chief word and the minor ones will likely be: BACKACHE, lumbago, rheumatism, diseases of the kidneys; by changing we get DISEASE OF THE KIDNEYS, backache, lumbago, etc., each of the words being in turn used in large type. For the throat and chest we have: COLD, catarrh, grip, throat trouble, weak lungs, tonsillitis, etc. For the nervous conditions we have words like headache, neuralgia, biliousness, neurasthenia, etc. With a large list of words there can be considerable shifting about. All these points are brought out in the clippings which I will show. The relative amount of space occupied by patent medicine advertisements in the newspapers of different Indiana towns and cities will also be shown by clippings. An examination will show that a minimum of such advertisements in a city means a comparatively clean city, while, on the other hand, in a dirty and dusty city the newspapers are full of advertisements of patent medicines relating to ailments and diseases directly attributable to the inhalation of a dust polluted atmosphere. Nature exacts her dues. What the people save by neglecting to keep their cities clean, they are compelled to spend, or do spend, for patent medicines in the vain attempt to counteract the evil influence of the dust. A comparative study of patent medicine advertisements in the newspapers of different cities, states and nations, furnishes much food for thought. Civic pride and dust seem incompatible. To be able to point with pride to one's home city is quite

different from having to explain to your visiting friend why everything is dirty and dusty.

It would be interesting to know the financial aspects or statistics of this subject, the cost of keeping a city clean and the cost of time lost on account of ill-health and the cost of so-called remedies used in attempting to counteract the evil influence of the dust. There is of course a wide gap between a headache or a cold and pneumonia or tuberculosis, there are all stages of ill-health between such extremes and between the attendant loss of time and money.

Some of the nostrums are advertised for the cure of specific diseases like tuberculosis or consumption—a disease easily curable as a rule, in its early stages, but not by swallowing a lot of patent medicines. What is not claimed for patent medicines is not worth claiming. That reputable physicians do not prescribe patent medicines needs scarcely be mentioned.

It is of some interest to know that some of the most widely advertised nostrums can be made at a cost of one or two cents per gallon—the container and label of many costing more than the ingredients. There must of necessity be a large margin of profit or a “medicine” costing a few cents and selling for a dollar could not be advertised so extensively and so persistently.

In conclusion: As our country becomes more and more densely populated various sanitary problems arise and press for solution. This is especially true of our cities. Houses of brick and stone are displacing those built of wood and thus lessening the danger from fire. The open ditch has given place to the underground sewer; the mud road to the paved street. Shallow wells disappear before the advent of water works, and the latter themselves are getting a better supply by means of filtration.

Water-borne diseases have been reduced to a minimum in many cities and epidemics are prevented. The occurrence of many diseases, such as the plague, cholera, typhus, smallpox and the like, have been reduced to a minimum, if not entirely prevented, by proper precautions, based on a proper knowledge of their active cause and its diffusion.

What about preventing the ravages of ailments and diseases transmitted through the agency of the dust? What are we doing to reduce the amount of dust to a minimum? What efforts are we making to have pure air in our public halls, churches, street cars, and in the city generally?

What shall we do with the persistent floor and sidewalk spitter? Will education cause him to be displaced by a generation of non-spitters? What can we do for the poor, ignorant man, and his family, who keeps himself poor buying patent medicines—medicines which may give relief but which can not cure.

The chief charts used in illustrating the paper were as follows:

1. Chart showing the common names used in patent medicine advertisements. The names were arranged in three columns, the first giving names of ailments of a catarrhal nature or of the respiratory system, and marked in red; the second column, marked in blue, contained names of the rheumatic and aching type, thus::

"Catarrh"	"Rheumatism"
"Colds"	"Backache"
"Grip"	"Lame Back"
"Sore Throat"	"Kidney Disease"
"Pleurisy"	"Aching Joints"
Etc.	Etc.

In the third column were given the names used more especially in connection with the nervous and gastric manifestations of dust infection, such as nervousness, headache, neuralgia, gastritis, a touch of malaria, etc.

2. Chart showing the amount of space occupied by advertisements of patent medicines in the newspapers of different cities and towns. The total space occupied by medical ads of all kinds, and that means of nostrums and of quacks, varied from 2.5 to 14.2 per cent., while the ads of dust disease nostrums (as indicated on chart 1) varied from 1.1 per cent. in a comparatively clean city, up to 10 per cent. (and even more) in a dusty city.

(Are we justified in concluding that if the inhabitants of a clean city pay \$1.10 per year, those of a dusty city are compelled at the same time to pay \$10.00 for patent medicines?)

3. An exhibit of the total number of ads and the amount of space they occupy in newspapers of half a dozen different cities. Clippings all pasted on long rolls of paper. The contrast between a clean and a dusty city is thus shown in a striking manner.

4. A selection of large ads, some occupying a full page. Most of these appeared at times when the dust was at its maximum, namely in the fall and again in the spring. The title of this sheet was: "Who Pays the Bill?"

5. Chart showing the seasonal prevalence of patent medicine ads. The fall and spring tides; low ebb in the summer. (In the summer the sputum on the sidewalks is sterilized by the hot rays of the sun, the streets are sprinkled and doors and windows are open.)

6. Clippings pasted on sheets showing the changes in names in the same advertisement at different times of the year, and from day to day or week to week. The words catarrh, colds, rheumatism, kidney disease, etc., being marked in red or blue—as indicated on chart No. 1.

