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Town Planning Includes "Sunlight Engineering"*

Streets Should Generally Run Northeast-Southwest or Northwest-Southeast Instead of Being Square With the Cardinal Points—Main Streets Built Up With Skyscrapers Should Be North-South if Building Heights Cannot Be Limited

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IN an address delivered a few weeks ago, your president, C. A. Bigger, said:—"Astronomy is one of the oldest and most interesting of the sciences; the intellectual progress of a nation usually corresponds with its advancement in the study of this science;" and in speaking of the heavenly bodies,—“The sun as the source of light and heat, is essential to our existence, hence as time progresses, the work of astronomers may be said to be directed to its study with more interest than that accorded any other body.”

I have chosen for my subject one that readily permits me to link up astronomy with town-planning. When you are as enthusiastic as I am about town-planning you will know that everything of value that you have learned has a place there; town-planning is a sort of melting pot for all your knowledge, refining it into the pure gold of usefulness.

I wish to recall briefly to your attention some well-known astronomical and other facts about the sun. I then hope to show you that these points should be considered in the determination of the direction and width of streets; height, orientation and density of buildings; and similar matters of more or less importance in planning. Some of these facts undoubtedly have been considered in some cases, and the lay-out or orientation of buildings has been influenced thereby. But I believe I am correct in stating that it is only recently that the application of such facts has been a matter of careful study.

How much weight should be given to this question of sunlight that I am going to discuss, must be a matter of judgment in each case; there may be factors or conditions that make it of small importance. But in some instances it is of great importance, and in general, to the town-planner is given the problem of the scientific utilization of sunlight in his lay-out of streets and buildings.

For the purpose of this paper I propose to consider the light derived during the day under the classifications of (a) daylight or skylight, and (b) sunlight, and it is the latter with which we are mostly here concerned. "Skylight comes from all directions of the heavens; sunlight from only one direction, constantly varying with the revolution of the sphere,"—Atkinson in his "Orientation of

Buildings," to which work I am indebted for a great deal of the information in this paper.

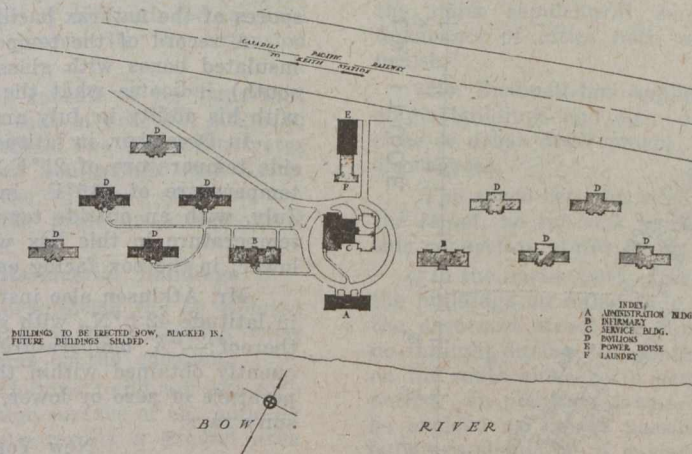
The astronomer has been searching the heavens with telescopes of ever-increasing size and power to bring to our knowledge far distant heavenly bodies. A similar search has been made by the bacteriologist with high-powered microscopes of also ever-increasing magnification. These now disclose many small forms as cleverly hidden from us in the past as were the distant stars. Just as the astronomer feels certain that there are many bodies which he has not yet seen, so is it with the bacteriologist in his work. The latter, however, generally has various means of verifying his presumptions,—for example that of letting a bacterium indiscernible with the microscope, produce under favorable conditions a colony of such proportions that it is readily seen by the naked eye.

In this connection, the few brief points I wish to make here are that this interesting study of bacteriology has demonstrated that there is no death but a constant change of life from one form to another, this being made possible by the action of myriads of bacteria. Now some of these bacteria and allied organisms go about their work in a way that appeals to us; they make fertile our fields, enable us to make such everyday articles as bread and cheese, or silage for cattle; dispose of sewage; in fact enter largely into all natural operations.

But some bacteria are not so friendly. I forget how many different kinds of organisms some expert recently discovered attending one case of influenza,—but every contagious and infectious disease is caused as a rule by a specific bacterium or similar organism. Diphtheria, influenza, pneumonia and tuberculosis are infectious diseases that may be caused by bacteria present in the air. And in many diseases ordinarily described as contagious, bacteria may be exhaled by the patient.

The oxidizing action of direct sunlight and its accompanying drying properties are the greatest natural agencies in destroying disease or pathogenic bacteria. This point I wish to emphasize, because I feel that in the final analysis, it is the strongest scientific argument that can be advanced, so far as housing is concerned, for direct sunlight.

In a cubic metre of air taken from over the ocean there was found only one bacterium. In the same amount of air taken from a Paris hospital there were 79,000 bacteria. In the open air of the country, there are many less than



CENTRAL ALBERTA SANITARIUM, SHOWING PROPER ORIENTATION OF THE BUILDINGS

*Read before the Royal Astronomical Society, Ottawa Branch.