

**THE ORIENTATION OF
BUILDINGS OR PLANNING
FOR SUNLIGHT**

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The Orientation of Buildings or Planning for Sunlight by William Atkinson

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WILLIAM ATKINSON

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by
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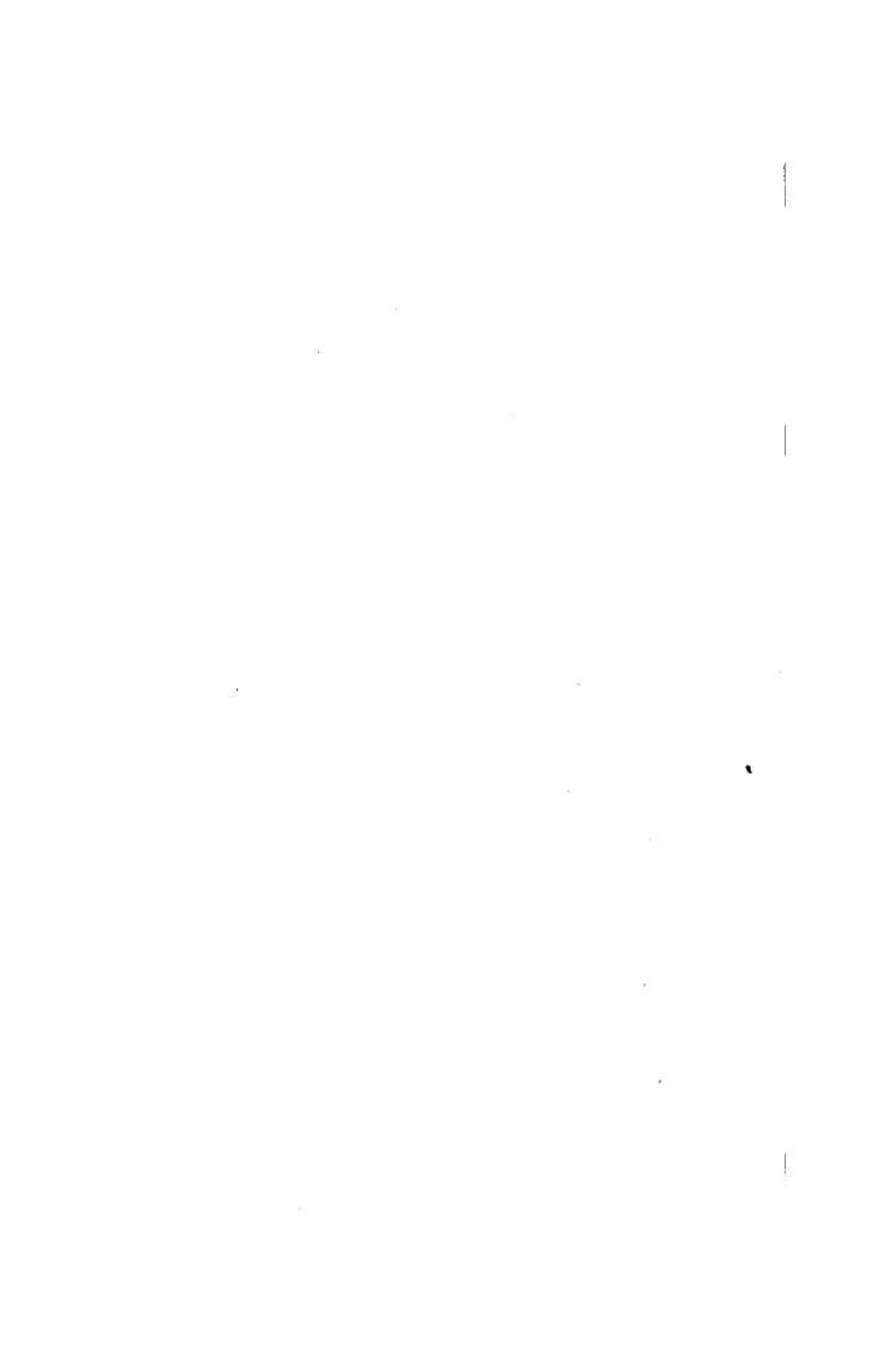
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IN MEMORY OF
J. TRUMAN BURDICK



PREFACE

THE purpose of this book is to set forth the principles which ought to govern the planning of buildings with respect to sunlight, a subject to which very little attention has been given.

Several years ago, in an essay on hospital construction,¹ I wrote as follows: "To study properly the question of sunlight, a sun plan of the buildings must be drawn, and their positions considered with respect to the shadows they cast upon each other and upon the ground." This statement describes very well the general method of study which I have followed in my investigations, the results of which are now for the first time presented to the public in a complete form.

I had begun my study of orientation with hospitals especially in mind, but I soon realized that the general principle of planning with reference to sunlight was of fundamental importance in the design of all buildings, and especially in the planning and laying out of cities. In this connection I may mention that a series of diagrams made by me, at the request of a committee interested in securing new legislation regulating the height of buildings in Boston in 1904, was of great service in showing the effect of tall buildings

¹ "Small Hospitals," by A. Worcester, M. D., and "Suggestions for Hospital Architecture," by William Atkinson, Architect, New York, John Wiley & Sons, 1894.

in overshadowing and shutting out the sunlight from the streets. Another series of street diagrams, first shown at a lecture given by me before the Society of Arts, at the Massachusetts Institute of Technology, has been reprinted by permission in a recent English book on city planning. Some of my earlier studies in orientation, originally published in the *National Hospital Record*, have been twice reprinted in *The Brickbuilder* magazine, and also embodied, by permission, in a recent American book on hospital construction.

All of which has encouraged me to believe that a more complete presentation of the subject, in book form, would not be without interest to the public.

In my first chapter I have included so much of the elements of astronomy as is necessary to a clear understanding of the apparent motion of the sun, and the variations in the angles of sunlight at the different seasons. I have also described the method of the stereographic projection, by which the angles of sunlight may easily be obtained, for any season of the year, and for any latitude.

The second chapter deals with the distribution of sunlight upon the exterior of buildings, and its admission to the interior, through windows.

In this chapter I have developed the method of the "shadow curve" and the "area of complete shadow," an application of the principles of descriptive geometry to the recording of transitory occurrences, which, as far as I am aware, is new. General principles for the planning and placing of buildings are given as far as it has seemed desirable. It is, however, to be understood that, for the

best results, each case must be studied as a separate problem, with reference to local conditions, and especially with reference to the latitude of the place. In connection with the study of windows an account is given of my experiments with the "sun box," an apparatus devised by me to test the practical effect of different window exposures.

My third chapter is devoted to hospitals. In it I have discussed the vexed question of the best orientation for hospital ward pavilions and have ventured to make recommendations in this regard at variance with common practice. I have also presented a plan for a new type of hospital building especially designed to meet the needs of modern medical treatment.

The last chapter is concerned with the distribution of sunlight in streets, as affected by their direction and width, and the height of the buildings upon them. In an appendix I have given in full the building law of Paris regulating the height of buildings and a synopsis of the regulations of some American cities in this matter.

While the working out of the diagrams and the calculation of the tables has been a matter of pure mathematics, admitting but one result, the conclusions to be drawn from them are to some extent a matter for individual judgment.

It is therefore fitting that I should give here a statement of the premises on which my recommendations are based.

I have assumed that it is desirable, in our climate, that all buildings in which human beings dwell or work should have all of their exterior walls exposed to direct sunlight at some time during the day throughout the year, and that the surfaces of streets, alleys, areas, courtyards, and other