NATURAL ROCK ASPHALTS AND BITUMENS, THEIR GEOLOGY, HISTORY, PROPERTIES AND INDUSTRIAL APPLICATION

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THEIR GEOLOGY, HISTORY, PROPERTIES AND INDUSTRIAL APPLICATION

BY

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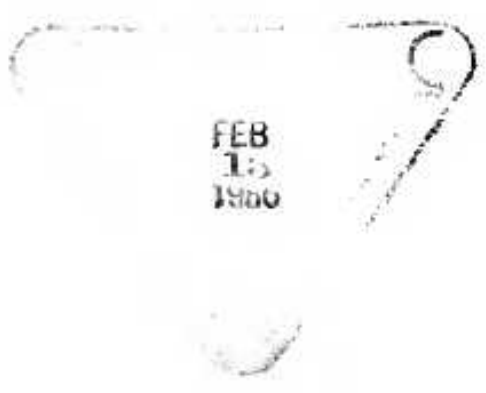
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PREFACE

THE entire absence of a modern English work upon the materials that will be considered in the following pages is almost inexplicable. Beyond occasional articles in the technical journals and the necessarily biased pamphlets of the producer, manufacturer or seller, no English literature having reference to these most valuable products is to be found until we go back for a space of nearly twenty years, a period during which much advance has been made in the production and the use of these articles, fresh deposits have been uncovered and worked, many fallacies have been exposed and extensive chemical research has been made in them. This being so, it is hoped that the appearance of this volume may be regarded as opportune, particularly so since the past year (1912), although not actually celebrated as such, was the bi-centenary of the re-discovery of the use of rock asphalt for constructional and waterproofing work.

As one who is daily in touch with the various materials about to be mentioned, the writer is aware how much the want of such a work is felt by those who, whilst they are desirous of obtaining a deeper and clearer insight into the production, properties, and uses of these articles, find that such knowledge is inaccessible, owing to the lack of any recent English work dealing with them. The idea of the writer, therefore, is to fill this want in the following pages, and, bearing in mind the difficulties that he himself has had to overcome, as well as the problems that have been placed before him in his position as advisory expert on these materials, it has been his endeavour to keep all matters as clear and as lucid as possible. With this ever in mind, unnecessary technicalities have been rigidly avoided, tests have been kept as simple as possible,

and if the matter which is dealt with in the introductory remarks is kept in mind, there should be no indecision at any time as to the particular material that may be referred to in any particular place, a difficulty not entirely overcome by some of the previous writers upon this subject, though it must be understood that the terms "asphalt" and "bitumen" are used here in their restricted commercial sense, and not as adopted in geology.

It has been his endeavour also to adopt a strictly impartial position in his remarks, recommending no particular mine above another, no particular bitumen in preference to another, unless practical experience has clearly proved such a superiority. In any case, each type can usually show some advantage over the others, so that it rests finally with the prospective user to decide upon what particularly desirable property he is requiring in the material to be employed in the work at the time under his control, and then to specify or to purchase accordingly. The rock asphalt, for instance, that makes the best wearing roadway is not, as will be seen in the following pages, the most suitable for roofing purposes, nor is a short fibred bitumen always the best to use in the manufacture of bituminous materials that are to be subject to any appreciable tension. In all cases it is a matter of a particular property for a particular purpose, and it is here that the services of an experienced independent consultant in asphalt and bitumen are of inestimable advantage.

It is the hope of the writer that the reader, having arrived at the end of this work, will be able to acknowledge that he has gained information of profit and advantage to him in his work or profession. No trouble has been spared by the writer to obtain suitable information and material for this work with which to complement his own personal knowledge, and the various foreign works which bear thereon have been carefully studied for that purpose. The matter having reference to the ancient uses and writings regarding these materials, too, has been furnished to him by a scholar specialising in ancient

lore, to whom the writer is also greatly indebted for much of the general information which has also been embodied in the chapter bearing thereon. A further visit was paid by the writer to the Continent during the past year, in order that the matter and descriptions given in the chapter bearing on the Continental asphalt mines should be as accurate as possible.

It will be noticed that at times the subject-matter in the following pages is at variance with that of other writers, particularly American ones, on certain more or less technical points, but it should ever be borne in mind that each country has its own peculiar conditions, particularly as regards climate, with the result that what is a success in the one may turn out to be an absolute failure in another. An article in a recent issue of an American technical journal bears independent witness of this, as does also M. Barabant's reference to certain London roads inspected by him that had been made up with a rock asphalt which had given anything but satisfactory results when used in his own city, Paris. It is owing to this fact that the writer has preferred to refer principally to the European writers on this subject as his authorities, instead of American ones, except, of course, where their intimate knowledge of local material enables the latter to speak from first-hand acquaintanceship.

The writer takes this opportunity of acknowledging his intense appreciation of the unstinted permission afforded him by Professor Clifford Richardson, of New York, to make reference to the contents of his well-known work, "The Modern Asphalt Pavement" in those parts of this present volume devoted to American bitumens. Nor can he conclude without expressing his deep sense of gratitude to Mr. H. W. Brant, of Newcastle-on-Tyne, by whom the matter dealing with the practical application of rock asphalt mastic has been almost entirely written. As the outcome of many years of close attention to the practical side of this industry, his remarks can hardly be otherwise than of the greatest value to the practical user of this material.

In his position as an entirely independent consulting