

THINGS PETROGRAPHIC
EXAMINATION CAN AND
CANNOT DO WITH CONCRETE
PART TWO
SOME BASICS AND GUIDELINES

By

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ABSTRACT

Our routine procedures for Petrographic Examinations of Hardened Concrete are discussed. A new test for ettringite is proposed. This also discriminates between ettringite and thaumasite.

INTRODUCTION

In a previous paper, above basic title, the writer attempted to give an overview of the variety of applications of petrography to the study of hardened concrete (1).

Initially, it was the intent of this Part Two to expand on those applications and case histories.

However, it seemed more reasonable for the present paper to deal with some fundamentals, realities and popular misconceptions regarding concrete petrography. It is also the present intent to offer some hints and guidelines that might be useful to the beginning petrographer and are not easily to be found in the literature. It is hoped that some practical value will result.

ORIGIN OF CONCRETE PETROGRAPHY

Concrete petrography did not originate in the concrete industry. It derives from the geologic science classical petrography which describes natural rocks. Its origin can probably be traced back to early mining, constructions and alchemy. Over many years various techniques were developed to permit identification and description of natural rocks and minerals. These cover every means of description available throughout the advancing development of the sciences of mineralogy, chemistry, physics and petrography. Features such as color, relative hardness, toughness, "heft" (density), magnetic susceptibility, morphology, texture, effects of acids, solubility, effects of heating, cleavage (of minerals), streak and luster are examples of things that are readily tangible to the unaided eye- that developed over many years and remain first steps in any examination - not requiring elaborate equipments and instrumentation.

Few modern-day references ever mention the ancient use of the blowpipe and simple chemical tests and yet this simple technology requires only a tool box amount of equipment and often can easily, quickly and accurately identify minerals and rocks - with only bits and pieces of sample. Smith (1953) has written a masterpiece on this subject and his book should be a required course for budding mineralogists (2). Not sophisticated perhaps - no blinking lights or dinging whistles but sometimes quick and reliable. It is also economical.