

Ink Printing :

A NEW METHOD OF RECORDING THE CHARACTERISTICS AND DISTRIBUTION OF MACRO-FOSSILS IN POLISHED SECTIONS

By B. A. Bannister, M.Sc., Ph.D., and
K. F. G. Hosking, M.Sc., Ph.D., A.M.I.M.M.

DEEP etching of a lightly-polished surface with a reagent that has a selective action is a well-known metallographic technique for revealing segregation in steel ingots and the flow of metal in a forging. For a permanent record of the etched structure, a photomacrograph may be made, but the simpler device of Ink Printing often gives an equally useful picture without recourse to photography. A thin layer of printers' ink is applied, and the pattern is transferred to paper as in an ordinary printing operation.

This method, which was first suggested by Sorby (J. Iron Steel Inst., 1886, i, 140) and later developed by Humphrey (*ibid*, 1919, i, 273), appears to have been used solely for metal structures. But as fossils and the matrices in which they are embedded are often attacked by a given reagent at appreciably different rates, it appeared to the authors that if a flat surface were prepared on a sample of rock containing macro-fossils, in some instances at least it should be possible to etch the surface in such a manner that an ink print could be made which would constitute a permanent record of the shapes and distribution of the fossils.

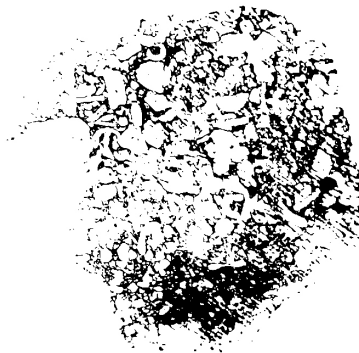
Accordingly, several specimens of polished fossiliferous limestone were degreased by means of alcohol and ether and then placed in Petri dishes : there, in order to determine the optimum etching conditions, they were subjected to attack by hydrochloric acid of various concentrations, and for varying times. After removing a specimen from its acid bath it was immediately washed in running water and then dried by applying blotting paper.

When the etched surface was quite dry, a thin uniform layer of duplicating ink was applied by means of a rubber roller. The roller was inked by rubbing it over a thinly-inked glass plate until the ink was sticky. To take a print the inked surface of the specimen was pressed for a few seconds on to a piece of glossy art paper resting on a few thicknesses of blotting paper, which in turn rested upon a porcelain tile. Having taken a print, the specimen was cleaned by rubbing it with a rag soaked in carbon tetrachloride.

It was shown by these experiments that it is possible to obtain very good records of the major structures of macro-fossils, but that



1



2



3



4



5

PLATE 1. TYPICAL INK PRINTS OF MACRO FOSSILS IN LIMESTONE. Print No. 5 was taken from a portion of an ammonite which was replaced by pyrite and embedded in calcite.

it is necessary to vary the acid concentration and the duration of attack from specimen to specimen in order to obtain optimum results. In many cases, however, a one-minute etch with 5N. HCl is satisfactory.

Furthermore, it is absolutely essential that the ink be in a sticky condition and evenly and thinly applied. The pressure during printing must not be excessive, and the maximum which can be safely applied will vary with the degree of etching.

Some reproductions of typical ink prints of macro-fossils are shown on the accompanying plate. If required, further details can be easily inserted in black or white ink (depending on whether it is desired to make additions to the white or black portions of the print).

Although only hydrochloric acid was used during these preliminary experiments, it will obviously be necessary, on occasion, to employ other etching reagents. The method could doubtless also be used to obtain a quick record of the distribution of comparatively large masses of a given mineral appearing on a flat surface, provided that an etching reagent were selected which attacked that mineral and the other components of the specimen at appreciably different rates. It is hoped to continue investigations along these lines.

R. TAYLOR & SON

The Original Outfitters
to C.S.M. Sports Club

TIES, SQUARES AND RUGBY
JERSEYS IN CLUB COLOURS

— *Sports Club Navy Blazers* —
SPORTS REQUISITES FOR ALL GAMES

BASSET ROAD, CAMBORNE

Phone 3131