

ABSTRACT

A procedure for separating pollen and spores from tar is described. It involves solution of the tar in naphtha, flotation of the dissolved tar on acetic acid and methyl alcohol, and decantation.

A technique for separating pollen and spores from tar

SHAMIM A. FARUQI AND ALBERT J. COPLEY

Department of Botany
University of Karachi
Karachi, Pakistan

Department of Geology
University of Iowa
Iowa City, Iowa

INTRODUCTION

Tar pits have been extensively studied for the remains of plants and animals, as well as for materials of archeological interest (Templeton, MS.). Pollen preserved within the tar, however, has not been thoroughly investigated. In the literature known to us, a suitable technique for the isolation of pollen and spores trapped in tar is not available. Palynological data obtained from tar pits cannot be used in the same fashion as those from lake beds, because in tar pits pollen deposits are not necessarily in an orderly sequence as they are in lake beds. Nevertheless, information about pollen and spores may be valuable when used together with other information. Thus a reasonable conceptual visualization of phytogeography and paleoecology at the time of deposition may be obtained. In an investigation of the Pleistocene lake deposits of western Oklahoma the authors devised a technique which has proved satisfactory for the isolation of pollen from tar. The efficiency of this technique was checked, both by isolating artificially introduced pollen from tar, and by separating naturally trapped pollen from tar.

ACKNOWLEDGEMENTS

This research was made possible by a grant from the Frontiers of Science Foundation of Oklahoma. The work was done at Cameron State College, Lawton, Oklahoma, where Faruqi and Copley were Chairmen of the Biological Science and Physical Science Departments respectively.

SEPARATION PROCEDURE

1. Place about five grams of tar in a large test tube and add 20 ml. of naphtha. Stir with a glass rod until the naphtha is saturated.
2. Put about 10 ml. of the saturated solution of tar-in-naphtha into a centrifuge tube. Add 5 ml. of acetic acid and 5 ml. of methyl alcohol to the contents of the centrifuge tube. Stir with a glass rod. The dissolved

tar will rise to the top leaving a clear layer of methyl alcohol and acetic acid.

3. Centrifuge and decant the liquid.
4. Add the remainder of the saturated tar-in-naphtha solution from step 1 to the centrifuge tube and repeat steps 2 and 3.
5. To the residue again add 10 ml. of naphtha, 5 ml. of acetic acid and 5 ml. of methyl alcohol, centrifuge and decant.
6. Repeat step 5 of the procedure until the top layer is semiclear to clear.
7. Centrifuge and decant.
8. Wash the residue first with alcohol, and then with water.
9. Add 10 ml. of saturated solution of potassium chlorate or chlorox for the purpose of bleaching.
10. Agitate for a few minutes, centrifuge and decant.
11. Wash residue twice by adding distilled water, centrifuging and decanting.
12. Stain in Safranin O. Prepare slides either in glycerine jelly (Wodehouse, 1935), or follow the procedure given by Norem (1956).

REFERENCES

- NOREM, W. L.
1956 - *An improved method for separating fossil spores and pollen from siliceous rocks*. Jour. Pal., vol. 30, no. 5, pp. 1258-1260.
- WODEHOUSE, R. P.
1935 - *Pollen grains: their structure, identification and significance in science and medicine*. New York: McGraw-Hill, pp. 1-574.
- TEMPLETON, B.
MS. - Personal communication (1964) with regard to the La Brea Tar Pits.