

SAMPLING FOR MICRO-ARCHAEOLOGICAL RESEARCH

The diagram is one of an archeological profile 19" deep. Line AB is the datum level, line CD is the base level. The object is to make a stratigraphic analysis on the basis of fossil pollen. To do this two columns, X and Y, will be taken.

First, vertical cuts, 3 or 4 inches deep, will be made from the top to the bottom of the profile (EF, GH, JK). These are spaced 6" apart.

Next, beginning at the base level CD, column X is marked off in 2" levels. Then column Y is marked off, though the bottom level of column Y is only 1". This technique allows more particular analysis of any one level as unusual effects found in one 2" sample may be clarified by analysis of the adjoining samples. Each of these two inch levels will hereinafter be called windows. Thus column X contains 9 complete windows and one window approximately $1\frac{1}{2}$ " high, while column Y contains 9 complete windows and one window approximately 1" high. Each window is then collected separately. If possible, the columns should be so located as to give good provenience to cultural materials.

The "face" of the window is scraped off with a trowel or knife for about $1/4$ " to eliminate present day contamination. Working quickly, the collector then probes in and attempts to cut out a block of soil if possible. If the soil is loose and crumbly it will not make any appreciable difference. About 2 lbs. (900-1000 grams) should be collected. Only about 100 grams will be needed for pollen analysis, but the sample may also be used for micro-faunal analysis, shell analysis, and recovery of seed and bone remains. 1000 grams of sample also allows a safe margin for the possibility that the data may be referred to again in the future.

The basic problem in making such collections is that of contamination. When dealing with microscopic particles such as pollen grains there can be no more effective precaution against contamination than that the collector of the sample keep his wits about him and recognize utmost care in collection. Analysis of the sample deals with the frequencies of various materials. It is thus seen that small amounts of contamination may make significant differences.

Some of the basic precautions are as follows:

- 1) Take the samples from the bottom of the column upwards if possible. This precludes the possibility that material from windows above the one being worked on will drift down and contaminate the sample. In cave deposits and the like, this may not be convenient. If samples are taken from the top downwards, another "face" will present itself which must be scraped off.

- 2) Be sure the tools are clean. The knife, trowel, spoon, etc. used in taking the sample should be wiped clean after each contact with the soil. Disposable tissues or towels will be quite adequate for this purpose as long as no clumps or bits of soil are left clinging to the tools.

A rinse in distilled water would be convenient. Rinsing the tools in tap water without wiping them off would probably cause more damage than merely wiping them since this water would contain pollen from some other area completely and the contamination would then be constant throughout the sample.

3) The sample containers must be clean. Paper bags are not advised as containers. If the bag has been used once or is dirty it is obviously unfit, they tend to tear and break easily, and they are difficult to keep tightly closed. Besides this, paper bags are very porous and tend to pick up stray pollen grains easily.

The best containers to use are plastic bottles with wide mouths and screw caps. These are light, easily packed for storage or shipping, unbreakable, and can be easily labeled with a grease pencil. They should, however, be rinsed with distilled water before use.

Second best would be ordinary polyethylene refrigerator bags placed inside a glass jar. The bags and jars are easily obtained and the only inconvenience is that they are both liable to break when transported unless packed carefully. Plastic bags of this sort may be tied in a knot at the mouth or tied with a string with the label on it.

Polyethylene bags which are sealed and then placed in a labeled paper bag may be adequate, depending on storage conditions, necessity of shipping and field convenience. In a pinch, the soil sample may be taken into a large piece of fresh aluminum foil, tightly sealed and placed into a paper bag. Unfortunately, this method does not lend itself to the collection of large samples.

Other improvisations will probably suggest themselves in the field, but it must be kept in mind that the material is windborne and microscopic. Every added chance for contamination lessens the validity of the sample.

4) Wind contamination. The direction of the prevailing wind, depending on its force and constancy, may be an important factor. The collector should attempt to avoid taking a stratigraphic sample with his back to the wind. The wind, as it strikes the upper windows which he has not yet taken samples from, will cause a constant fall of minute particles into the sample being taken at the moment. If the collector takes his samples facing the wind, contaminating material will be blown past him.

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