

Separation of Lice from Hair, Wool or Feathers. By Prof. P.A. BUXTON.

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Keratin (which is the principal constituent of hair, wool and feathers) is soluble in alkaline solutions of sulphides. As the material goes into solution, the alkalinity drops, and it appears that the pH should be maintained at or beyond 11.0. In practice it is not easy to measure the pH, for the solutions are coloured and turbid, but one can find an empirical formula which gives satisfactory results: it seems that the best proportion is 2% sodium sulphide and 2% potassium hydroxide in water. The material should be put in this solution and boiled or set in a bath of boiling water. A large volume of solution must be used; 200 cc. of the above per gram of hair is sufficient. The material must be maintained at or near boiling/point until it filters readily. Whatman's No.3 paper allows very quick filtration and is resistant to the solution.

The same technique has been applied to feathers, and even the stiff "rachis" or mid-rib of the feather dissolves readily. But the basal part of feathers of many birds contains a black pigment which is not altered, and which makes it impossible to see the lice when all the feather has been dissolved. A method of overcoming this difficulty is described below. The same solution readily dissolves a flannel shirt, but the lice will be found tangled up in the cotton threads which were used for stitching the garment together. It is desirable, therefore, to find a solvent for cellulose which would not attack chitin.

If the hair or other material contained lice, they can be found on the filter paper. The external skeleton is not touched by the solution and the insects are ^{not} rendered brittle, but they are transparent and difficult to see. It is best, therefore, to wash them off the filter paper with a stream of distilled water and stain them in eosin. It is found that other stains, for instance fuchsine and carmine, are destroyed by the traces of reagent which remain in the specimens. The black pigment, which is so abundant in black hair or feathers, will not pass through even a coarse filter paper. In this case it is best to remove the lice from the solution by flotation. After the hair has dissolved by heat, the liquid is put in a stoppered separating funnel, with liquid paraffin, and shaken. The lice become wet with the paraffin and float up with it, the black liquid remaining below and being allowed to run off through the cock at the bottom of the funnel.

The methods here described have a number of possible applications. They permit one to collect lice with a minimum of trouble from a large sample of material. They should also make it easy to study the changes in seasonal incidence of these insects in populations.