COLLECTING MOLLUSKS ON AND AROUND ATOLLS

by Joseph P. E. Morrison

In order to obtain the greatest scientific benefit from any specimens collected, the place and/or zone or region of the atoll must be carefully recorded. In mollusks, as in most other animals, one finds different species in the different habitats or environments in, on, and around an atoll. Marine shells may sometimes be collected in good condition, abundance, and in great variety from beach drift along or just above the high tide line. In the absence of time and equipment available to collect living marine specimens, and prepare or preserve them, the collection of drift material, particularly of the smaller species, makes a very valuable contribution.

In the absence of preservative, the smaller species may be dried thoroughly, then packed in newspaper, and sealed in boxes or cans for later cleaning. Iron stain on mollusks shells, from rusting of tin can containers is to be avoided; when packing material in cans, wrap well with several layers of newspapers, etc., between the shells and cans. Field cleaning of marine mollusks taken alive may be accomplished by killing and cleaning them in jars of fresh water. Specimens from different localities should always be kept separate to maintain the locality records. A change and washing in fresh water once or twice a day, every day until the shells are clean (that is, do not smell too much) is necessary for this method. If left too long without changing, the acids of decay will etch the shells, leaving them poor and chalky in appearance.

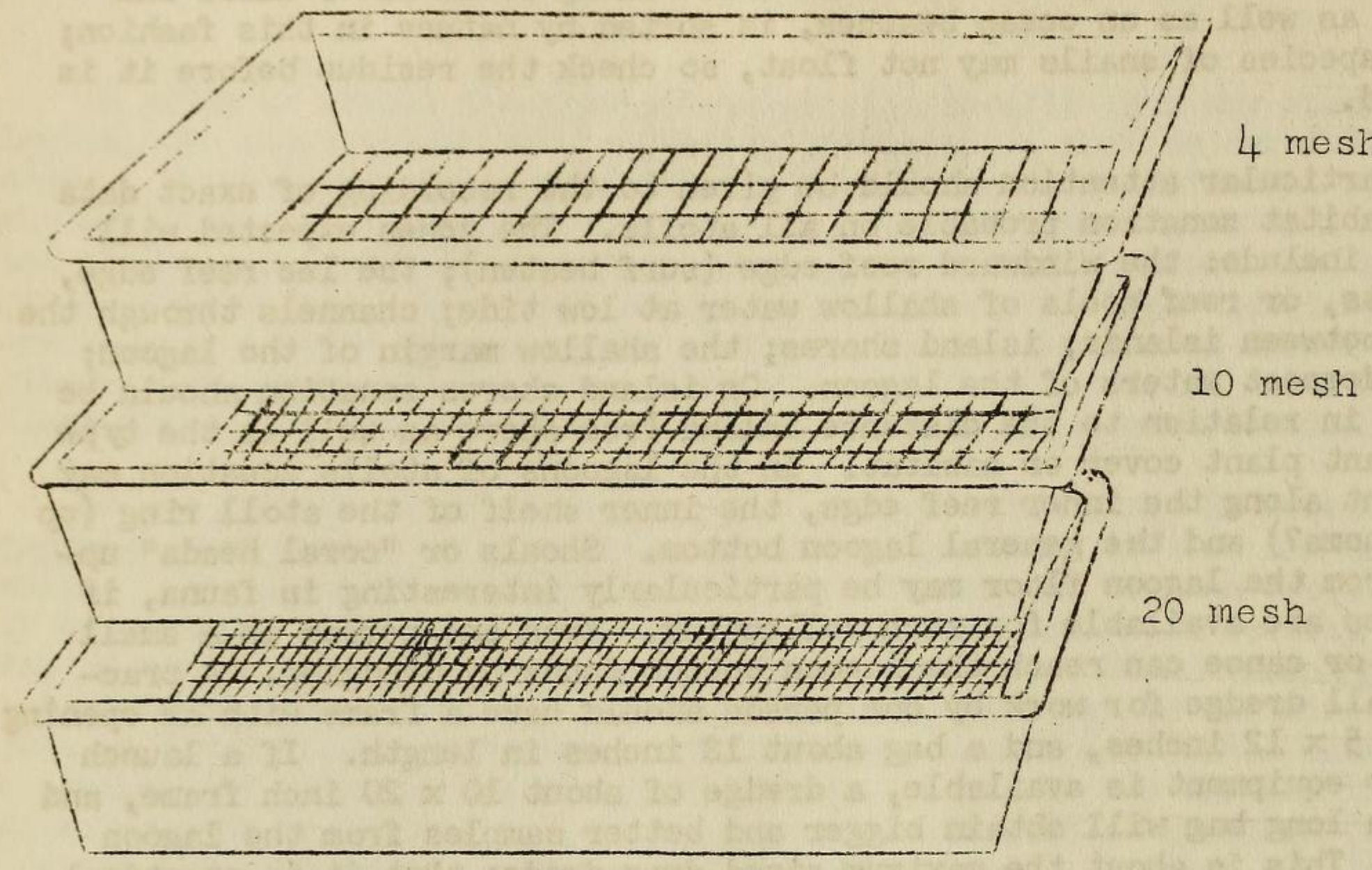
Certain small marine (and fresh water) species may be collected in numbers in a minimum of time by vigorously washing or shaking them off rocks or plants in a bucket full of water. The water, if muddy in the bucket, may be cleared of mud and floating plant material by repeated filling and pouring off the top 3/4 of the water. The bottom residue containing snails is then poured out of the bucket (through) on to cheese cloth or field screens or a dip net, and dried or preserved. Pulmonate fresh water snails (that float when disturbed) may be recovered in this process by pouring all water out of the bucket through cheese cloth or whatever other fine strainer may be available.

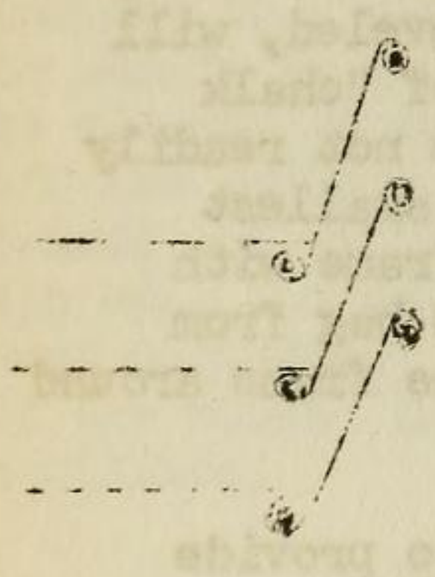
The smaller land species of mollusks are usually the only types found upon atolls. These may be collected in numbers by taking quart size or larger samples of leaf mold or other detritus where ever these small snails are seen in abundance in the leaf mold or on or in the soil surface immediately under the leaves, etc. The mass of large samples may be greatly reduced after drying by screening the leaves, larger rock fragments, sticks, etc., out through screen of 4 or 6 mesh to the inch. The fine material containing the smaller land snails may then be dried and sacked or boxed for later separation, at the museum, of these minute land species. Excessive dust may be screened out through mesh as fine as 20 mesh to the inch. Caution: Ordinary window screen (16 mesh to the inch) may pass most of the fine species with the dust. If there is excessive sand or foram sand or rock in the sample, the sample may perhaps be concentrated, after drying, by water separation. In this water separation, the sample is put in a bucket or jar of water, the rock fragments sink, and the minute snails, etc., are skimmed off the surface,

thoroughly dried again, then packed. Drift along fresh water lakes and streams, as well as on ocean beaches, is sorted by nature in this fashion; all the species of snails may not float, so check the residue before it is discarded.

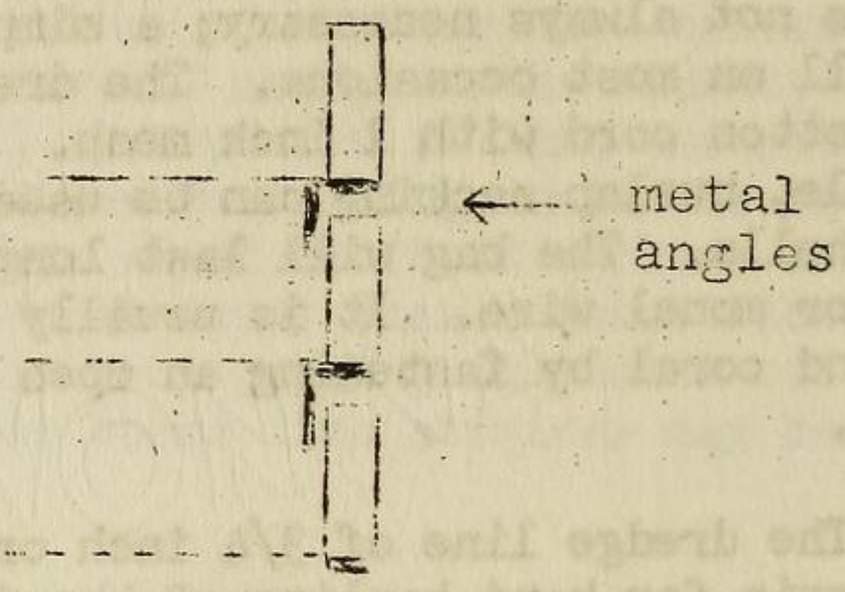
Particular attention should be given to the recording of exact data on the habitat zonation probable on all atolls. The zones expected will probably include: the windward reef edge (surf beaten); the lee reef edge, reef flats, or reef pools of shallow water at low tide; channels through the reef or between islands; island shores; the shallow margin of the lagoon; and the deepest waters of the lagoon. On island shores zonation should be recorded in relation to the distance inland from shore as well as the type of dominant plant cover or habitat. In the lagoons of atolls zonation may be present along the inner reef edge, the inner shelf of the atoll ring (up to 5 fathoms?) and the general lagoon bottom. Shoals or "coral heads" upraised from the lagoon floor may be particularly interesting in fauna, if facilities are available for such collecting. Even one person in a small row boat or canoe can reach the lagoon bottom fauna by dredging. A practical small dredge for work by one person should have a frame with an opening of about 5 x 12 inches, and a bag about 18 inches in length. If a launch and other equipment is available, a dredge of about 10 x 20 inch frame, and a 30 inch long bag will obtain bigger and better samples from the lagoon bottoms. This is about the maximum sized drag-dredge that it is practical to use without power winches. The frame of a dredge may be made of any readily available metals such as bar or strap iron. If all parts are galvanized it will last longer in salt water, and will not rot out the cloth dredge bags by rusting in such a short time. The outward flare of the dredge frame is not always necessary; a simple plate, with inner edge beveled, will work well on most occasions. The dredge bag is made of netting of "chalk line" cotton cord with 1 inch mesh. If special dredge netting is not readily available, burlap sacking can be used; this will retain even the smallest snail shells. The bag will last longer if it is wired onto the frame with copper or monel wire. It is usually advisable to protect the net bag from rocks and coral by fastening an open ended sleeve of canvas to the frame around the bag.

The dredge line of 3/4 inch or 1 inch rope (large enough to provide a good grip for hand hauling of the dredge) is securely attached to only the longer of the two triangle halter frames. The short one is tied to the longer (arrows in diagram) only with two turns of marline cord or string. This cord will break, and release the dredge from obstructions, before the line breaks. Usually this is a sufficiently effective device, even on coral bottoms. If the dredge "hands up," backing up on the line and pulling in the reverse direction should clear it. About three times as much line as the depth of water is the proper amount to use for this type of dredging. The speed of dragging should be slow enough so as not to pull the dredge off the bottom or have it only skip along. With experience one may judge even the type of bottom the dredge is moving over, by the simple method of holding one hand on the dredge rope and feeling the vibrations from the dredge.



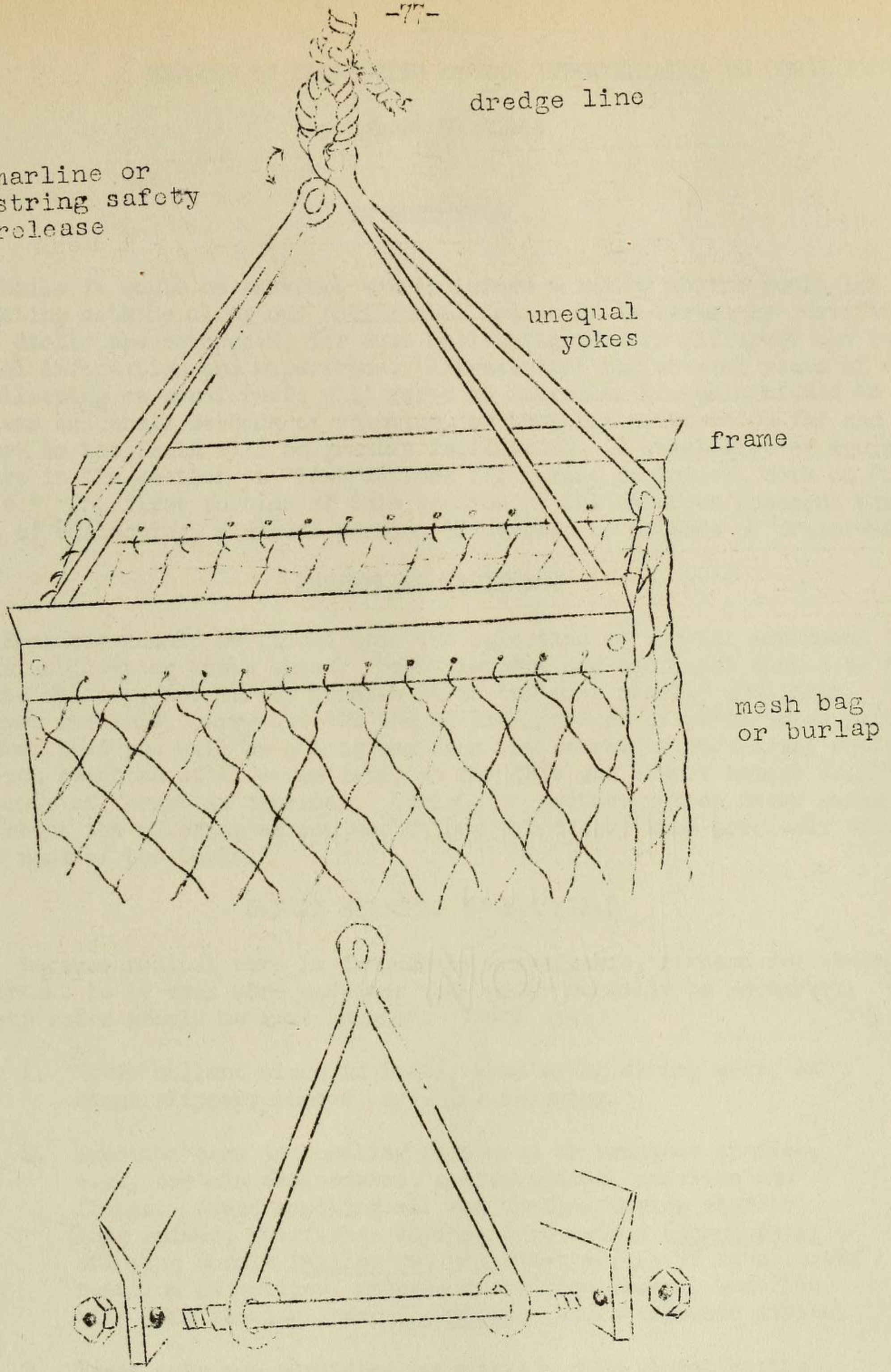


metal frame nesting



wood frame nesting

FIELD SCREENS



A PRACTICAL DREDGE