

The Farmer's Advocate AND HOME MAGAZINE.

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DOMINION.

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may be available might be used to advantage in just such circumstances as we have mentioned. So long as this class of help are instructed not to cut too close to the corn plants, especially with a sharp hoe, they can do a good service in cleaning a field of corn and making it suitable for future cropping. This appears like one place where inexperienced help could be utilized. In the meantime keep the cultivator going.

Co-operation Amongst Experimenters.

It has long been plain that too little co-operation exists between agricultural experimenters in this country, and that while working with the same ends in view they are not able to pull together. This apparently is not characteristic of Canadian institutions only for Scotland Yet, in his letter published elsewhere in this issue, complains of similar conditions in Britain, where he says: "Unhappily all such research work in Scotland has hitherto been crippled by a lack of funds, and another unhappy feature is a disposition to petty jealousy on the part of those engaged in physiological research. In place of an honorable striving to see who can do most to minimize loss and enhance the value of live stock through the discovery of the causes of and the remedy for such plagues there is a disposition to act the censor on each other. Such manifestations leave an unpleasant impression on the lay mind."

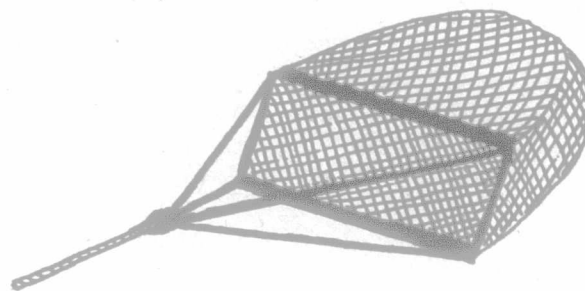
This lack of unity amongst the authorities in this country leads often to confusion through the publication of conflicting statements and advice. There should be a co-ordinating department where all the information could be assembled and prepared for public consumption. And there should be harmony amongst those to whom we look for guidance in things agricultural.

Nature's Diary.

A. B. KLUGE, M. A.

In our last article we gave a general sketch of the work in marine biology which is being done by the Biological Board of Canada, and gave a description of the manner in which samples of water were obtained from various depths. Now when these samples have been secured they are placed in bottles, hermetically sealed and are later examined chemically to determine the amount of salt present. This is a very important thing to ascertain, as many species are regulated in their distribution chiefly by the salinity of the water. Attached to the deep sea water bottle, with which the samples of water are obtained, is a minimum thermometer, in which the thread of mercury is broken when the thermometer is reversed by the reversing of the water-bottle. Thus the temperature at the bottom, or at any intermediate point, can be ascertained. At the same time the temperature of the surface water is taken.

This work of securing data of the salinity and temperature of the water is done at certain definite stations, whose position is marked on a chart, and at these same stations different kinds of gear are used to obtain specimens of all the kinds of animals and plants which occur at that place. The kinds of gear employed are the plankton net, dredge, shrimp trawl, crow-foot dredge, otter-trawl, line-trawl, and seine.



Dredge.

Plankton nets are conical nets made of very fine bolting-cloth, with a bottle tied into the small end. They are of various sizes, and are arranged and weighted in different ways so that they may tow at different depths. As the plankton net is towed through the water it retains all the minute forms of life which pass into it, and when the net is hauled in these are all washed into the bottle. These extremely small forms of life, the great majority of them so minute that they are imperceptible to the naked eye, are very important economically. Many of them are the food of commercial fishes and others constitute the food of various organisms which in turn are the food of fishes. Thus the distribution of these minute organisms, which are collectively known as plankton, very frequently determines either directly or indirectly, the distribution of important commercial fishes.

A dredge consists of an iron frame with a net suspended from it and with iron arms to which a rope is attached at the point at which they come together as shown in our figure. The dredge is dragged slowly over the bottom of the sea, the bar on the bottom scrapes off and gathers into the net all the forms of life which are lying on, or attached to, the bottom. In this way a great variety of animals, unobtainable in any other way are brought to the surface.—Starfishes, Sea-urchins, Brittle-stars, deep-water Crabs, Sea-anemones, Sand-dollars, Sea Cucumbers, deep-water species of shell-fish and hosts of other forms.

The crow-foot dredge consists of an iron bar from which hang numerous chains, each chain carrying a series of iron hooks. These hooks gather up material on the bottom.

An otter-trawl is a long, cone-shaped net with a very wide mouth. The mouth is kept open, as the trawl is dragged along the bottom, by wings with boards, known as otter-boards, fastened vertically. These boards each have a line attached to them, and these lines are attached to the long line by which the trawl is dragged. The result of this arrangement is that the boards tend to diverge as far as possible and thus keep the mouth of the trawl open. The otter-trawl is a very efficient form of gear for securing all kinds of bottom-feeding fish, and is used extensively in the fisheries.

The line-trawl consists of a long line to which short and lighter lines are attached at intervals of about two feet, these lighter lines each carrying a hook. One "shot", that is one long line, as a rule carries some three hundred hooks and three "shots" are joined to make the complete trawl. The hooks are baited and the trawl is coiled down into a tub, and when it is to be set first a buoy is put out with a line from this to the trawl anchor, then the anchor, then the trawl is paid out, then another anchor and buoy. The trawl is left out for about an hour, usually at slack water, that is the period at the turn of the tide when it is neither flowing nor ebbing, in places where there is much of a run of tide, and it is then hauled, the fish removed and the trawl coiled down into the tub.

A seine is such a widely known piece of gear that no description of it is necessary.

The afore-mentioned are the chief kinds of apparatus and the methods which are used in collecting material, but the collection of material is not all the work by any means. It is rather the beginning of the work, for when the material has been obtained then comes the determination, classification, recording, microscopic study of scales to determine ages, study of stomach-contents, and finally the bringing together of facts and the interpretation of facts.

Sandy's Corn Field.

BY SANDY FRASER.

I wis oot at church last Sunday as the day wis fine and I couldn't think up ony excuse but what the auld wumman would turn into another reason why I should go. When an auld chap like mysel' has to wark hard all week he's apt to get balky on movin' oot on Sundays sometimes. But na doot ye feel a' the better for it afterwards. Puttin' on yer guid clothes an' a clean collar has a restin' effect on ye some way.

Onyway I did as the auld wumman said, as usual, an' I'm glad to say that I made oot to stay awake frae the beginnin' tae the end o' the service. Na doot it wis because o' the text that the minister took to build up his sermon on. It was this: "That which the palmer-worm hath left hath the locust eaten; and that which the locust hath left hath the cankerworm eaten; and that which the canker worm hath left hath the caterpillar eaten." I gave Jean a nudge an' says I, "That's my corn-field he's takin' for a text the day. He must hae been around an' seen what little there wis left o' it. It's no' muckle to get material for a sermon oot o'."

But I wis mistaken, for the auld preacher went off on to another subject a'thegither and as I didna find it vera easy tae follow him I got tae thinkin' about the ups an' doons o' farm life, especially the doons, for the corn-field wis still on my mind. I'll hae tae tell ye about it sae that ye'll understand my feelins and ken how I cam' to be lettin' my mind rin on such things on the Sawbath, an' me in church at that.

About a year ago I took it intae my heid to clean up a piece o' stony land that I had at the back o' the place. It will raise a great crop o' corn, thinks I, for it's been pastured since my grandfather wis a yearling and it ought to be in shape to mak' up tae me for all the taxes I've paid on it. They say that ye shouldn't count yer chickens until they've been hatched oot for about two weeks but I thought I wis pretty safe in buildin' on gettin' a pretty fair crop frae that field.

Weel, ye never saw so many stanes for what little ground there wis on that three-acre field. But by thinkin' o' the fine crops we wad see on it some day, we made oot to stick to the job until we had the last stane in the wall. That is, all but the wee ones, of course. That wis last fall. This spring the first thing to do wis to plow the field an' harrow it. Then there wis mair stanes to be taken off, an' after that we rolled it sae that we could see the squares made by the corn-marker an' ken where tae plant the corn. When we had the last o' the seed in I says, "Weel, that's one guid job done onyway; we shouldna hae muckle mair wark wi' that. It's new land and won't be hard tae keep clean." And it wasn't. The crows an' the black-birds hae looked after that. In the first place the seed wasn't overly guid, although I had been promised the best that wis tae be had. We had to go over the ground an' plant a lot o' it the second time. Then after the birds that I spoke aboot had taken their toll we went over it again an' tried tae fill up the blanks. The next thing I noticed wis that something was workin' at the roots o' what wis left o' my corn and it wis withering up an' dying. "Weel," says I tae mysel' "the grubs an' the wire-worms hae to be fed, I suppose; let them tak' their share."

A couple o' days after I made this discovery: a bunch o' my heifers managed to get intae the field at a spot where the wire fence was a wee bit too high frae the ground and what they didna do to what wis left o' my corn wasna worth talking aboot. Aboot quarter o' the field they clipped off at the roots an' some they pulled oot a'thegither. We had to get the corn planters an' go at it again. This last we put in is just noo comin' up an' I am waitin' wi' some interest tae see what kind o' a beast is gaein tae get it.

I mind o' plantin' a field, one year, first wi' carrots, then wi' beets an' finally wi' turnips, before I got onything to grow. One o' my neebors wha had been watchin' me says, "Weel Sandy, ye'll hae the ground fertilized wi' seed if wi' naething else." And I'm thinkin' he might say the same thing aboot my corn-field. Oor minister took for his text one Sunday that verse where it says, "While the earth remaineth seedtime and harvest shall not cease," and the first part o' it is true enough onyway sae far as my this year's experience goes. Maybe what's left o' my corn will tak' advantage o' its opportunities an' the room it has, and amount tae something yet. I ken it's a great crop to pick up after a bad start.

"And what did the meenister get oot o' his locusts an' canker-worms an' sae on," says I tae Jean on oor way hame that day, "I wis sae busy thinkin' that I couldn't tak' all in he wis sayin'." "Oh, he wis makin' oot that all these things are for oor benefit," she replied. "If we didn't have ony difficulties an' discouragements to overcome in the shape o' ruined crops an' things o' that kind we would never amount to a hill o' beans." "Or corn," says I; "which is likely to be even less yet." "And he said," Jean went on, "that he thought that this auld earth had been pretty weel planned as a school for the education o' mankind, because things were fixed so that if a man was willin' tae wark an' dae his best he could mak' a decent an' honest livin', but that if he tried tae get oot o' daein' his share o' the world's wark he'd soon find oot what kind o' a scrape he'd get himsel' into. If conditions were much harder on this earth than they are, na doot man would, in a short time, become extinct. He'd give up the fight. But bein' what they are he gets enough encouragement to induce him to keep on in the hope that the finish-up will pay him for all his trouble an' hardship. And, said he, comin' to a close, 'I've noticed it generally does.'"

"That's right," I said, "The auld chap said something that time. I'm goin' to put the cultivator through that corn-field first thing in the morning, if there's enough o' it left so that I can see the rows ahead o' me," says I.