Canadian Record of Science.

this the precautions necessary to guard against contamination of the wire while attaching the string, and the necessity of having a separate bottle for each sample collected, rendered them inconvenient for field use.

The method of using sealed tubes or flasks with a tapering end bent at right angles to be broken off under the water, has been recommended by Escherisch of Munich. This is much more free from technical sources of error than the apparatus last mentioned, but the trouble of preparing such flasks is considerable, as one has to be manufactured for every sample to be taken.

In the last edition of Rohrbeck's catalogue I find an apparatus figured for collecting bacteriological samples at different depths. From the impression conveyed by the illustration it seems too complicated to be easily handled, and the entire apparatus evidently requires to be re-sterilized before a second sample can be taken.

At this stage my attention was directed to a most ingenious apparatus invented by Prof. Ellis of Toronto University, which differed from all the others in principle. This was a device by which sterile glass stoppered bottles could be placed in a weighted frame and lowered to the required depth. By pulling a string the stopper could then be raised sufficiently to allow the water to enter. By releasing this end the stopper was instantly replaced by means of a spring. Any number of samples could be taken, as the bottles could be placed in the frame one after another with very little loss of time. The advantages of this as compared with the plans described above are very great. There is absolute certainty that no water is obtained from any except the required depth. There is no limit to the number of samples which can be taken, and all the preparation necessary is limited to storilizing the bottles. It is also far more economical, as a single sinking frame contains in itself the attachments for opening and closing the bottles.

The instrument I am about to describe is a modification of that devised by Prof. Ellis, and I can claim no originality whatever with regard to the principle of opening

22