

A DROP PIPETTE FOR USE IN THE
KAHN TEST

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KAHN has suggested two pipettes for measuring antigen suspension: 1.5 or 1 c.cm. graduated to 0.01 c.cm. for measuring the 0.05 c.cm. quantities and 0.25 c.cm. graduated to 0.0125 for measuring the 0.025 and 0.0125 c.cm. quantities. The measuring of such minute quantities with these pipettes is not difficult when one is testing a few blood samples only. The method has certain disadvantages when a large number of tests has to be carried out. The strain on the eye due to reading of the level of fluid in the pipette is great. The time taken is long, not to mention the difficulty of delivering these minute quantities right down to the bottom of the tubes.

(Continued from previous page)

12.5 per cent of early syphilitic cases and 16.6 per cent in late cases.

In the early syphilis cases Kline is positive and other tests negative in 2.5 per cent and Kline is negative and other tests positive in 10.5 per cent showing that the Kline test is less sensitive. Similarly, in late syphilis Kline is positive in 4.5 per cent and negative in 11.9 per cent.

In non-syphilitic cases agreement between Kline and Kahn is the higher (90 per cent), and that between Kline and Wassermann, lower (76.5 per cent).

Kline agrees with the clinical condition of the patients in	84.8 per cent
Kahn agrees in	.. 93.5 "
Wassermann agrees in	.. 86.1 "

As a bedside test the modified Kline's test has its definite uses. It is easily performed in a few minutes. When only a very small quantity of blood is available, as in paediatric practice, also in cases where the result is required in a short space of time, this test may be usefully adopted. The simplicity of the test, however, is associated with the personal factor in the reading of the results. The doubtful and negative results are not easy to read.

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REFERENCE

Ch'in, T. L., and Huie Wong, D. (1932). *Chinese Med. Journ.*, Vol. XLVI, p. 645.

A simple drop pipette would obviate these difficulties in case a single drop measures exactly 0.0125 c.cm. as the other quantities are simple multiples of this.

With this idea in view we tried an ordinary Wright's pipette with rubber teat, bearing in mind that the quantity of fluid contained in a drop depends on the diameter of the delivering end of the pipette. By a series of trials the correct diameter for the delivering end was obtained. The next improvement thought of was some device to steady and regulate the rate of dropping. Wright's throttle pipette was not found quite satisfactory for this purpose. The simple device of making a sharp bend about an inch above the delivering end of the pipette brought about the desired regulation of the drops.

The advantages claimed for this pipette over the Kahn antigen pipettes are the following:—

1. It is easy to make, in any ordinary laboratory where there are facilities for simple glass blowing.

2. The time taken with this pipette for the distribution of the antigen is considerably reduced.

3. Eye strain in reading the level of the fluid (which is inevitable while using the Kahn antigen pipettes) is altogether avoided as one has only to watch the number of drops put into each tube.

4. There is no necessity to introduce the pipette to the bottom of the tubes while distributing the antigen.

Although this is a simple dropping pipette accuracy is not sacrificed at all. A series of 300 parallel tests was done with the drop pipette and with the Kahn antigen pipettes and it was found that the results were identical. After having thus satisfied ourselves we have adopted this pipette for our routine Kahn tests and about 100,000 tests have been done so far, using this pipette for the distribution of the antigen suspension.

Details of making the pipette

An ordinary glass tubing of the outer diameter 4 to 5 mm. and about 10 to 12 cm. long is drawn to a long tapering end in a Bunsen flame. The tapering end is passed through no. 54 bore of the standard drill and wire gauge (Starret and Co., New York) as far as it will go and a mark made on it with a grease pencil flush with the under surface of the gauge. The tube is then withdrawn and cut with a file at the grease pencil mark so as to obtain a neat cut. The pipette is held in a blow flame about an inch above the tapering end and rotated. When the glass is melted a sharp bend is made as shown in the illustration. The cut end is ground flat on a piece of fine emery

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PROXIMATE ANALYSIS OF A NATIVE BEER *PACHWAI* OF THE ABORIGINAL TRIBES IN BENGAL

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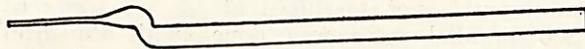
Pachwai is a country-made potable spirit, extensively consumed by the miners and the low class people in the Asansol mining settlement. Recently Chopra and Chopra (1933) have pointed out that it is the universal drink of most of the aboriginal tribes, such as the Sontals and Bhils, which inhabit the Chota Nagpur hills, and that its use has spread all over the province of Bengal. Men, women and children of tender age freely indulge in taking it. It is a very cheap beverage. One can get a pint of spirit for the small sum of two pice. On an average a man will consume about 6 to 8 pints during the day.

It is a very crude wort, ugly to look at. To many it would appear at first glance to be a deadly poison, containing innumerable bacteria, fit to be discarded from a hygienic point of view.

The Asansol mining settlement is the abode of cholera epidemics and there was a time when this *pachwai* was suspected to be one of the gateways of the transmission of cholera. On inspecting several grog shops it was found that the vats in which the boiled rice was kept

(Continued from previous page)

paper. A rubber teat is attached to work the pipette.



Special drop pipette for use in Kahn test.

The calibration was carried out by repeated trials as follows:—

A Wright's pipette with a long tapering end was made. Fifty drops of the antigen emulsion were dropped into a small tube with this pipette and the whole quantity was measured with a measuring pipette. If the quantity was found less than 0.625 c.cm., the tapering end was filed off a little higher to give a bigger drop and then another 50 drops were measured. Thus by a series of trials the correct diameter of the lower end of the pipette was determined which gave 0.625 c.cm. for 50 drops. This diameter was measured with the standard drill and wire gauge and it was found to be no. 54.

When 50 drops measure 0.625 c.cm. one drop from such a pipette measures 0.0125 c.cm. provided the pipette is held vertically and the antigen dropped at a uniform rate of 30 drops per minute. Thus one drop, two drops and four drops will give 0.0125, 0.025 and 0.05 c.cm. respectively.

for fermentation with yeast (locally named *bakhar*) was wholly covered up with swarms of flies and other insects. These are only partially separated by mechanical methods. This has tempted me to study it thoroughly from a hygienic point of view. On enquiry it was learnt that about 90 per cent of miners and general low class people of this mining area take the *pachwai*. In this article an attempt has been made towards the study of the proximate principles of this potable spirit, its bacteriological and microscopical examinations and the viability of different pathogenic bacteria in it.

Preparation.—It is prepared in a most crude and simple manner. Generally about 5 seers of rice are boiled with water for 2 to 3 hours, until an almost dry dough of boiled rice is obtained. This is then packed with the addition of necessary yeast (locally named *bakhar*) in an earthenware vat and kept in a damp and warm place with the mouth of the vessel tightly closed by a lid or cover, where fermentation is allowed to continue for 3 days. After 3 days a large amount of boiling water is added and the dilute watery solution of the spirit is separated from the 'lees' or residue, which consists chiefly of unfermented starch and yeast cells, by means of an iron net which serves the purpose of a strainer, and the filtrate as allowed through the network carries along a large amount of gelatinous boiled rice with the dilute watery mixture of the alcohol which constitutes the *pachwai*.

Physical characteristics.—It has a light yellowish tint. It is distinctly acidic, its pH value being slightly lower than 3. It has a peculiar flavour and contains much dissolved gas which causes it to froth. It exhibits ropiness. The yeast is not completely separated; yeast and many Gram-positive bacteria were detected by the hanging-drop method and staining method (detailed examination is proceeding). Microscopical examination of a loopful of *pachwai* revealed the presence of abundant yeast cells and some Gram-positive bacteria.

The yeast cells have the following characteristics:—Endospores, budding, Gram-positive and gas reaction.

Experimental

Samples of grog from different shops within the Asansol mining settlement have been analysed for:—its alcoholic content, fixed acidity, ash, starch, dextrin and cellulose, proteins, volatile acidity, ester, total solid matter, and suspended matter.

The large amount of gas present which causes it to froth during pipetting, measuring and distilling is got rid of before starting the analysis by the 'tossing method', in which process it is quickly poured from one vessel to another and back again several times, the