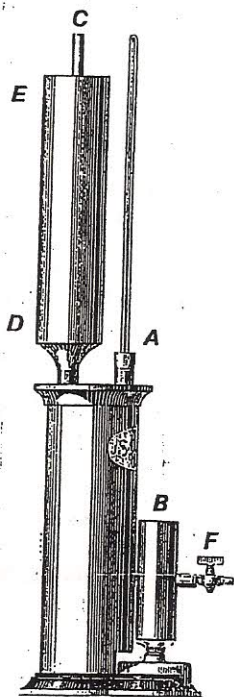




LABORATOIRES

DUJARDIN-SALLERON

## DIRECTIONS FOR USE OF THE DUJARDIN-SALLERON EBULLIOMETER



### DETERMINATION OF THE BOILING POINT OF WATER

Fill the lamp with undiluted 190 proof alcohol. Thoroughly rinse boiler and pour through the tube, "A", a quantity of water carefully measured out by means of the graduated glass filled to the mark *Eau*. Place thermometer in position. Light the lamp; place under "B". Soon after the mercury begins to rise, steam will come out of the top of the cooler. When the mercury becomes quite stationary, read temperature. Let us suppose the reading to be 100 degrés and one tenth = 100.1 degrés. Loosen the screw nut at center of the plastic calculating scale and bring the circular sliding part round until the division 100.1 degrés is directly opposite the division 0 of the fixed graduation on either side. Tighten the nut and the instrument is now calibrated. Many tests may be made without having to determine anew the "boiling point", as barometric alterations generally do not occur suddenly. On stormy days you may have to recalculate the boiling point of water 2-4 times a day.

Remove the thermometer and place in cotton wick tube inclined on a wooden support.

### HOW TO TEST WINES

Open the tap, "F", empty the boiler, rinse it with some of the wine to be tested, pour out again and blow through upper tube, "C", to clear away the condensed steam. Pour into the boiler a full measure of wine, (up to the mark *Vin* in graduated glass). Place the thermometer in "A", fill the cooling tank "D-E" with cold water and heat as previously. The mercury will rise and then stop; wait until it is quite motionless (mercury will bob up and down—read the highest point reached) and take the reading. Suppose it is 90.7...compare this figure with the scale. Opposite you read 13.5 degrees, which means that the tested wine contains 13.5% of pure alcohol by volume.

Use scale on outer edge of circular sliding part, marked *Degre Acoolique du Vin*.

In order to render this test more rapid, an Ebulliometer provided with a double boiler is available by special order. With this unit the above mentioned operations may be made simultaneously.

### TESTING DRY WINES AND LIQUIDS WITH A HIGH ALCOHOLIC PERCENTAGE

The thermometer and the alcoholometric scale of the Ebulliometer cannot be used with liquors having more than 25% alcohol. When such liquids are to be tested, first dilute them with a known proportion of water, and after the test multiply by the same proportion the degree given by the Ebulliometer.

### TO TEST SWEET WINES AND LIQUORS

No Ebulliometer is effective with very sweet wines and liquors. The dilution of the liquor with water may reduce the error produced by addition of sugar, but it does not correct it absolutely. Such tests are only approximate and to obtain exact results, recourse must be had to distillation.



## TO TEST ACETIFIED LIQUIDS AND VINEGARS

The ordinary calculating scale disc used for wines cannot be used for vinegars as acetic acid has an influence on the boiling point. A special scale can be supplied, but this is never sent unless especially ordered.

## IMPORTANT RECOMMENDATIONS

It is important that the heating of the boiler be regular and constant. The lamp wick should always be the same size, and it is necessary to replace the wick if it begins to get charred because of too scanty a supply of alcohol. This trouble may be avoided by always keeping the lamp filled with alcohol.

Before each test it is essential to first carefully rinse out the boiler with some of the wine to be tested. Then drain out through tap "F", afterwards blowing through tube "C". Refill condenser with cool water for each test.

## THERMOMETER

This is a very delicate instrument and is easily broken unless special care is used.

Never put the warm thermometer on a cold table and always use extra care when handling this fragile glass instrument. If the column of mercury becomes separated, it is easy to get the mercury column joined again. Grasp thermometer firmly by the bulb at bottom, with stem upright against the forearm. Then gently shake like a clock pendulum. Never knock the thermometer against anything hard, but rather on the palm of hand or on a pad of folded cloth. To avoid breaking thermometer it must never be plunged in a cold liquid while bulb is hot, or vice versa.



## EBULLIOMETER DISC

### Directions for Use

Hold the square plate in the left hand. With the right hand loosen the middle button a quarter turn. Now turn the movable disc which shows the degrees of the thermometer so as to bring the degree reading on the thermometer (point *Eau*) opposite the 0 degree of the graduations (alcoholic degree).

Hold the disc in position with left thumb and

tighten the middle button making it completely steady (see that the disc does not get out of place when tightening it). It is then ready for all tests of wines that are made in the following two or three hours.

After reading the ebullition degree of the wines that have been tested, then (without touching the middle button) read opposite this degree (thermometer) the alcoholic degree of the tested wine in legal degree.

## \*ALCOHOL DETERMINATION BY EBULLIOMETER

An ebulliometer is an instrument for determining the alcohol content of an alcoholic solution by determining the difference in boiling points of water and the solution and then referring to tables or sliding scales to find the corresponding percentage of alcohol.

A typical ebulliometer consists of the following parts: ebulliometer boiler and reflux condenser; standardized centigrade thermometer; alcohol lamp; measuring cylinder; and a sliding scale or calculator.

**General Procedure** (Follow Specific Instructions Provided with Ebulliometer)

1. Determine boiling point of water. Since boiling point is affected by atmospheric pressure, check boiling point several times a day. Record or set on sliding scale.
2. Dilute wine sample so the boiling point of the diluted wine is within 4°C of the boiling point of water and the sugar content is less than 2%. Use volumetric pipets and flasks for all dilution. The dilution water must be at the same temperature as the wine. Use extreme care in making dilutions.
3. Determine boiling point of diluted wine. From tables or sliding scale read alcohol content of diluted wine and multiply this value by the dilution factor to determine the alcohol content of the undiluted wine sample.

### Special Precautions

1. Keep ebulliometer free of scale. Boil out with 2% sodium hydroxide after about 50 determinations. Rinse out all the sodium hydroxide before using again.
2. Keep alcohol lamp filled with denatured alcohol and make sure wick is not too short. Keep flame shielded from drafts.
3. Ebulliometer thermometers are fragile. Handle with care. Make sure mercury column is not broken.

### \*References:

*Wine Regulations ATF*  
*Methods for Analysis of Musts and Wines*  
Amerine and Ough