### Table 38.—Wine Exports as Shown by the Reports of the Bureau of Foreign and Domestic Commerce, Fiscal Years 1901 to 1925, Inclusive

<table>
<thead>
<tr>
<th>Year</th>
<th>Gallons</th>
<th>Year</th>
<th>Gallons</th>
<th>Year</th>
<th>Gallons</th>
<th>Year</th>
<th>Gallons</th>
<th>Year</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>1,147,561</td>
<td>1908</td>
<td>457,495</td>
<td>1914</td>
<td>941,357</td>
<td>1920</td>
<td>4,573,587</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1902</td>
<td>962,756</td>
<td>1909</td>
<td>427,408</td>
<td>1915</td>
<td>819,310</td>
<td>1921</td>
<td>26,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1903</td>
<td>693,846</td>
<td>1910</td>
<td>519,234</td>
<td>1916</td>
<td>1,133,274</td>
<td>1922</td>
<td>12,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1904</td>
<td>914,841</td>
<td>1911</td>
<td>1,394,994</td>
<td>1917</td>
<td>2,245,013</td>
<td>1923</td>
<td>47,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1905</td>
<td>856,786</td>
<td>1912</td>
<td>957,120</td>
<td>1918</td>
<td>2,765,344</td>
<td>1924</td>
<td>13,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1906</td>
<td>806,314</td>
<td>1913</td>
<td>1,975,151</td>
<td>1919</td>
<td>4,926,425</td>
<td>1925</td>
<td>14,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1907</td>
<td>573,359</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 39—Wine Imports as Shown by the Reports of the Bureau of Foreign and Domestic Commerce, Fiscal Years 1901 to 1931, Inclusive

<table>
<thead>
<tr>
<th>Year</th>
<th>Still wines</th>
<th>Champagnes and other sparkling wines</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>3,907,346</td>
<td>933,234</td>
<td>4,840,578</td>
</tr>
<tr>
<td>1902</td>
<td>4,493,480</td>
<td>995,768</td>
<td>5,489,248</td>
</tr>
<tr>
<td>1903</td>
<td>5,075,818</td>
<td>1,223,832</td>
<td>6,301,520</td>
</tr>
<tr>
<td>1904</td>
<td>5,421,150</td>
<td>1,008,735</td>
<td>6,429,885</td>
</tr>
<tr>
<td>1905</td>
<td>5,440,238</td>
<td>1,115,433</td>
<td>6,555,671</td>
</tr>
<tr>
<td>1906</td>
<td>6,122,563</td>
<td>1,246,182</td>
<td>7,368,745</td>
</tr>
<tr>
<td>1907</td>
<td>7,124,272</td>
<td>1,258,209</td>
<td>8,382,481</td>
</tr>
<tr>
<td>1908</td>
<td>7,329,066</td>
<td>1,100,007</td>
<td>8,429,073</td>
</tr>
<tr>
<td>1909</td>
<td>7,699,639</td>
<td>1,309,884</td>
<td>8,989,513</td>
</tr>
<tr>
<td>1910</td>
<td>9,567,390</td>
<td>1,173,009</td>
<td>10,740,399</td>
</tr>
<tr>
<td>1911</td>
<td>6,602,350</td>
<td>843,402</td>
<td>7,445,752</td>
</tr>
<tr>
<td>1912</td>
<td>5,595,802</td>
<td>842,484</td>
<td>6,438,286</td>
</tr>
<tr>
<td>1913</td>
<td>6,461,523</td>
<td>810,006</td>
<td>7,271,533</td>
</tr>
<tr>
<td>1914</td>
<td>7,405,289</td>
<td>343,890</td>
<td>7,749,179</td>
</tr>
<tr>
<td>1915</td>
<td>5,740,868</td>
<td>618,630</td>
<td>6,359,508</td>
</tr>
<tr>
<td>1916</td>
<td>5,904,113</td>
<td>587,142</td>
<td>6,491,255</td>
</tr>
<tr>
<td>1917</td>
<td>4,770,606</td>
<td>372,690</td>
<td>5,143,306</td>
</tr>
<tr>
<td>1918</td>
<td>3,604,335</td>
<td>27,822</td>
<td>3,632,161</td>
</tr>
<tr>
<td>1919</td>
<td>251,865</td>
<td>96,861</td>
<td>348,726</td>
</tr>
<tr>
<td>1920</td>
<td>723,723</td>
<td>122,942</td>
<td>846,665</td>
</tr>
<tr>
<td>1921</td>
<td>1,446,809</td>
<td>678,639</td>
<td>2,125,448</td>
</tr>
<tr>
<td>1922</td>
<td>645,987</td>
<td>175,469</td>
<td>821,456</td>
</tr>
<tr>
<td>1923</td>
<td>161,510</td>
<td>92,930</td>
<td>254,440</td>
</tr>
<tr>
<td>1924</td>
<td>90,721</td>
<td>81,639</td>
<td>172,359</td>
</tr>
<tr>
<td>1925</td>
<td>79,713</td>
<td>76,979</td>
<td>156,692</td>
</tr>
<tr>
<td>1926</td>
<td>63,033</td>
<td>36,882</td>
<td>99,915</td>
</tr>
<tr>
<td>1927</td>
<td>33,337</td>
<td>35,408</td>
<td>68,745</td>
</tr>
<tr>
<td>1928</td>
<td>33,497</td>
<td>1,298</td>
<td>34,795</td>
</tr>
<tr>
<td>1929</td>
<td>34,211</td>
<td>35,509</td>
<td>69,719</td>
</tr>
<tr>
<td>1930</td>
<td>28,196</td>
<td>29,434</td>
<td>57,631</td>
</tr>
<tr>
<td>1931</td>
<td>26,306</td>
<td>27,649</td>
<td>53,955</td>
</tr>
</tbody>
</table>
### Table 40.—Apparent Consumption of Wine in the United States, Fiscal Years 1912 to 1932, Inclusive

<table>
<thead>
<tr>
<th>Year</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1912</td>
<td>57,059,000</td>
</tr>
<tr>
<td>1913</td>
<td>55,988,000</td>
</tr>
<tr>
<td>1914</td>
<td>53,189,000</td>
</tr>
<tr>
<td>1915</td>
<td>33,341,000</td>
</tr>
<tr>
<td>1916</td>
<td>47,942,000</td>
</tr>
<tr>
<td>1917</td>
<td>42,999,000</td>
</tr>
<tr>
<td>1918</td>
<td>52,242,000</td>
</tr>
<tr>
<td>1919</td>
<td>51,110,000</td>
</tr>
<tr>
<td>1920</td>
<td>16,329,000</td>
</tr>
<tr>
<td>1921</td>
<td>21,989,000</td>
</tr>
<tr>
<td>1922</td>
<td>6,538,000</td>
</tr>
</tbody>
</table>

### Table 41.—International Trade in Wines—1930

(In thousands of gallons)

<table>
<thead>
<tr>
<th>Country</th>
<th>Production</th>
<th>Imports</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>1,109,933</td>
<td>352,781</td>
<td>28,914</td>
</tr>
<tr>
<td>Italy</td>
<td>551,737</td>
<td>494</td>
<td>27,263</td>
</tr>
<tr>
<td>Spain</td>
<td>481,585</td>
<td>37</td>
<td>92,200</td>
</tr>
<tr>
<td>Algeria</td>
<td>359,314</td>
<td>838</td>
<td>297,135</td>
</tr>
<tr>
<td>Roumania</td>
<td>221,542</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>Argentina</td>
<td>165,000*</td>
<td>1,512</td>
<td>144</td>
</tr>
<tr>
<td>Portugal</td>
<td>155,669</td>
<td>17</td>
<td>21,603</td>
</tr>
<tr>
<td>Hungary</td>
<td>95,626</td>
<td>23</td>
<td>8,265</td>
</tr>
<tr>
<td>Germany</td>
<td>66,905</td>
<td>21,934</td>
<td>1,394</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>62,417</td>
<td>†</td>
<td>2</td>
</tr>
<tr>
<td>Austria</td>
<td>31,768</td>
<td>9,850</td>
<td>17</td>
</tr>
<tr>
<td>Australia</td>
<td>18,150*</td>
<td>58</td>
<td>470</td>
</tr>
<tr>
<td>Switzerland</td>
<td>16,909</td>
<td>30,902</td>
<td>69</td>
</tr>
</tbody>
</table>

* Estimated.
† Less than 1,000 gallons.
Source: International Yearbook of Agricultural Statistics.
SELECTED BIBLIOGRAPHIES *

YEASTS AND FERMENTATION


ALLEN, PAUL W. Industrial Fermentation. New York, 1926.

BITTING, K. G. Yeasts and Their Properties. (Purdue University Monograph Series, No. 5.)


* The student will find directions to further bibliographies on all of the topics included here, except whiskey, in: West and Berolzheimer. Bibliography of Bibliographies on Chemistry and Chemical Technology. Washington, 1925, 1929, 1932.
DISTILLATION. PRACTICAL AND THEORETICAL

ELLIOT, C. Distillation in Practice. London, 1925.
HAUSBRAND, E. Principles and Practice of Industrial Distillation. Trans. from the 4th German ed. by E. H. Tripp. London, 1925.

ALCOHOL

DE VOL, EVERETT T. A Farmers’ Practical Treatise on Fermentation, Distillation and General Manufacture of Alcohol from Farm Products with Subsequent Denaturing. Omaha, 1921.
WRIGHT, FREDERICK B. Alcohol from Farm Products. New York, 1933.

DISTILLED LIQUORS

DE BREVANS, J. La Fabrication des Liqueurs. Paris, 1897.
KULLMANN, OTTO. Die Spirituosen Industrie. Leipzig, 1912.
PIAZ, A. DAL. Die Cognac und Wein Spirit Fabrikation so wie die Trester und Hefebranntweinbrennerei. Wien, 1891.
SELECTED BIBLIOGRAPHIES

ROGERS, ALLEN. Industrial Chemistry. New York, 1926.

WINES

BIOLETTI, FREDERICK T. Manufacture of Dry Wines in Hot Countries. California Agricultural Experiment Station, Bulletin 167. 1905.
BIOLETTI, F. T., and CRUESS, W. V. The Practical Application of Improved Methods of Fermentation in California Wines during 1913 and 1914. California Agricultural Experiment Station, Circular 140. 1915.
BIOLETTI, F. T. The principles of wine making. California Agricultural Experiment Station, Bulletin 213. 1911.
BIOLETTI, FREDERICK T. Winery Directions. California Agricultural Experiment Station, Circ. 119. 1914.
BIOLETTI, FREDERICK T. The practical application of improved methods of fermentation in California wineries during 1913 and 1914. California Agricultural Experiment Station, Circ. 140. 1915.
DE BREVANS, J. La Fabrication des Liqueurs. Paris, 1897.
SELECTED BIBLIOGRAPHIES

COSTE-FLORET, P. Procédés Modernes de Vinification.


HAYNE, ARTHUR PERONNEAU. Bull. 117, Agricultural Experiment Station. University of California, 1897.


KULISCH, P. Sachgemasse Weinverbesserung. Berlin, 1903.


MEISSNER, RICHARD. Untersuchung der Weinplize. Stuttgart, 1901.

MENOTTI DAL PIAZZ, A. Handbuch des Praktischen. Weinbaues, 1908.


ROGERS, ALLEN. Industrial Chemistry. New York, 1926.


SELECTED BIBLIOGRAPHIES


SIMON, ANDRE L.  Bibliotheca Vinaria; a bibliography of books and pamphlets dealing with viticulture, wine making, distillation, management, sale, taxation, use and abuse of wines and spirits. G. Richards, Ltd., London, 1913.


ANALYSIS


PREScott, ALBERT B.  Chemical Examination of Alcoholic Liquors. New York, 1880.

SELECTED BIBLIOGRAPHIES

ROSENHEIM, OTTO, and SCHIDROWITZ, PHILLIP. On some Analyses of Modern “Dry” Champagne. In the Analyst 25, 6–9, 1900.


STATISTICS


INDEX

Absinthe, 203
Acetaldehyde, 22, 23
Acid-alcohol ratio in wine, 259
Acid conversion process, 110, 111
Acidity, charge during fermentation, 168
function of, 162
total, determination of, 278, 288
volatile, determination of, 279
Aging, artificial, 128
British practice, 128
charred barrels in, 128
of liqueurs, 194
President Taft’s report on, 128
Snell & Fain on, 129
Agrafe, 183
Agricultural products, consumption of, 330, 334, 335
Alcohol, boiling curve of, 80
crude, neutralization of, 90
determination of, 261, 287
distillation curve of, 81
Alcohol-extract ratio in wine, 259
Alcohol, immersion refractometer tables, 308-319
in cider, 188
recovery of, 127
specific gravity tables, 302-307
steam used for, 95
theoretical yield, 18
yield from barley, 29
yield from corn, 32
yield from oats, 33
yield from rye, 30
"Alcool d’industrie,” 140
Aldehydes, 91
determination of, 288
Alembic des Iles, 142
Alkalinity of ash, 276
Alkermes de Florence, 204
Amines, in alcohol, 91
Amino-acids, role in fermentation, 23
Amyl alcohol, 23, 24
Amylase, 10
Amylopectin, 11
Amylose, 11
Anaerobes, 58
Analysis, reasons for, 230
"Analyzer,” 87, 90
Angelica liqueur, 204
Angostura Bitters, 226
Anisette, 205
Applejack, 152
Apple, varieties, 188
"à premier-jet” still, 141
Arrack, 153
Ascospores, 48
Ash, alkalinity of, 276
determination of, 275, 287
Ash-extract ratio in wine, 275
Aspergillus Niger, 56, 57, 58
Autolysis, 14, 19
Bacteria, disease, 55, 59
effect of SO2 on, 62
Barley, average composition of, 28
botanical description, 28
Barley grain, cross-section of, 72
yield from, 29
Bath-tub gin, 150
Bead, 128
Beer still, 90, 91
operation of, 92
"Benedictine,” 208
Bitters, 226
Black currant brandy, 209
Black mold, 57, 58
Blended whiskey, definition, 233
Blending of liqueurs, 192, 193
of whiskey, 136
Blue mold, 56
"bonne chauffe,” 141
Botrytis cinerea, 56, 57, 58, 59
Bourbon whiskey, aging of, 129
description, 99
Brandies, analyses of, 292, 293, 294
Brandy, aging of, 142
blending of, 142
classification of, 140
description of, 139
distillation of, 141
doing of, 143
F.A.C.A. definition, 235
wine for, 142
British brandy, 143
"Bronillis,” 141
Brou de Noix, 219
Burnt ale, 105
Cane sugar solutions, density of, 298-301
"Cap” on fermenting wine, 168
Caramel, detection of, 295
Caramel malt, 74
INDEX

Carbohydrates, 4
Carbon dioxide in champagne, 181
Carboxylase, 22
Cassis, 209
Catalysis, 13, 14
Cent Sept Ans, 220
Cereal grains, average composition, 36
"Cerelose," 10
Champagne, dosage of, 179
manufacture of, 180
pressure of, 183
Changes during fermentation, 168
Chaptalizing, 176
"Chartreuse," 210
"Chauffe vin," 83, 141
Cherry cordial, 212
Chlorides, determination of, 277
Chlorophyll, 46
Cider, 187
Clarification of liqueurs, 196
Cocoa, cream of, 213
Co-enzymes, 15, 16
Coffee, cream of, 213
"Coffey" still, 87
Cognac, F.A.C.A. definition, 235
Color of grapes in wine, 168
Color, insoluble in amyl alcohol, 295
water insoluble in whiskey, 293
Coloring of liqueurs, 196
Coloring, permitted, 241
Colors, vegetable, synthetic, certified, 44
Column still, 87
Compound gin, F.A.C.A. definition, 235
Concentrating column, 94
Conge, 192
"Conge à trancher," 194, 195
Consumption of distilled spirits, 328, 343
Consumption of wine, 329
Cordials, 190
analyses of, 259
methods of analysis suggested, 297
U. S. Dept. Agr. definition, 229
Corn, average composition, 32
description, 31
varieties, 31
Corrections of wine, permitted, 238
"Corty's head," 86, 87
Cream of absinthe, 203
of Vanilla, 225
Creme d'Ananas, 222
Creme de cacao, 213
de Menthe, 218
de Moka, 213
Creme de Noyaux, 220
Curacao, 214
manufacture of, 200
Cuvée, 181
Cytase, 72
Defecation of grape must, 67
Dematium pullulans, 54, 56, 58
Demerara rum, 147
Density of sugar solutions, 298-301
Dephlegmator, 92
Dessert liqueur, 216
Dextrin, 10
Dextrose, 5
Diastase, 10
Diastatic power, 74
Diatomaceous earth, 189
Dihydroxy-acetone, 21
Disaccharides, 4
Distillation, alcohol recovery in, 95
definition, 79
Distillation of liqueurs, 192
Distillation, steam used for, 95
Distilled, gin, F.A.C.A. definition, 234
Distilled spirits, production of, 327, 336
Distiller, illicit, 97
Distilleries, registered, member of, 331
Dop brandy, 140
Dry wine, definition, 158
U. S. Dept. Agr. definition, 236
Dunder, 146
"Eau de vie," 140
de Dantzick, 217
de Hendaye, 217
"Eau de vie de marc," 140
Egg white, in fining, 178
Elixir de Garus, 216
Embryo, 71
Endo-sperm, 71
Enolic acids, 168
Enzymes, classification, 14
description, 13
preparation, 15
specific, 13
Essence, 43
Essential oils, defined, 43
origin, 43
Esters, determination of, 288
origin, 43
Exhausting column, 93
"Export trade" rum, 144
Exports, of distilled spirits, 338, 339-341
of wine, 345
Extract, determination of, 266, 287
Feints, 90, 105, 107
Fermentation, aeration in, 105
completion of first, 169
general requirements, 17
Lavoisier's formulation, 18
open or submerged, 18
INDEX

Fermentation, Pasteur’s formulation, 18
- products of, 18, 19
- rate of, 19
- temperature variation of, 19
Filtration of liqueurs, 198
Fining of liqueurs, 196
Fining of wine, 176
Flavoring Agents, classified, 41
Flavoring, permitted, 241
Foreign trade in distilled spirits, 327
Foreshots, 105, 107
Fortified wine, definition, 158
- U. S. Dept. Agr. definitions, 236
Fractional distillation, 79
French Vermouth, 228
\(d\)-Fructose, 5
Fungi, 46
Furfural, determination of, 289
Fusel Oil, 18, 23, 90
- determination of, 290

Galactose, 5
Gallizing, 176
Garus’ Elixir, 216
Gas pressure, in champagne, 183
Gelatin, in fining, 178
- in fining liqueurs, 198
Geneva gin, 149
Gin, analysis of, 256
- F.A.C.A. definition, 234
“Gin head,” 149
Gin still, 151
\(d\)-Glucose, 10
Glucose, commercial, 10
Glyceraldehyde, 21
Glycerol, 18, 22
Glycerol-Alcohol Ratio, 266
Glycerol in wines, determination of, 262-266
Glycogen, 21
Golden Elixir, 217
Grand mousseux, 183
Grape juice, changes during fermentation, 164
Grape pomace, brandy from, 140
Grapes, American Varieties, 38
- crushing of, 166
- for champagne, 180
- not recommended, 40
- planted in U. S., 37
- recommended, 40
- stemming of, 165
- yield per acre, 39
“Grappo,” 140
Gray mold, 57
Green chartreuse, 210
Green malt, 77
Guignolet d’Angers, 212

Hamburg brandy, 143
Hemicellulose, 12
Hendaye’s Elixir, 217
Hexabioses, 6
Hexose, 4
Hexose-di-phosphate, 20
Holland Gin, 149
“Home trade” rum, 144
Hot feints, 90
Huile de Kirschwasser, 218
Huile de roses, 223

Imitation champagne, 187
Imitation liquors, F.A.C.A. definitions, 240
Immersion refractometer tables for alcohol, 308-319
Immersion refractometer table for wood alcohol, 294
Imports, of distilled spirits, 342
- of wine, 346
Infusion, description, 192
Infusions, grades of, 209
International trade in wine, 347
Invertase, 16
Irish whiskey, 100
- F.A.C.A. definition, 234
- manufacture of, 103
Isinglass, in fining liqueurs, 197
- in fining wine, 177
Italian Vermouth, 228

Jamaica rum, analyses of, 254, 255
- manufacture of, 144, 145
Kirschwasser Liqueur, 217
Kornbranntwein, 154

Lactacidase, 21
Lactic acid, 21, 22
Lactic acid bacteria, 59
- use, 65
Lactose, 5, 6
Laevulose, 5
Lipase, 16

Liqueur de Dessert, 216
Liqueurs, analyses of, 259
- classification, 190
- methods of analysis suggested, 297
- operation in manufacture of, 192
Liqueurs par distillation, 191
- par infusion, 191
“Local trade” rum, 144
Low wines, 84, 105, 107
“Lyne arm,” 107

Maize, 31
Malt, definition, 71
- drying, 77
<table>
<thead>
<tr>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malt, green, 77</td>
<td>358</td>
</tr>
<tr>
<td>steeping for, 75</td>
<td></td>
</tr>
<tr>
<td>Maltase, 10, 16</td>
<td></td>
</tr>
<tr>
<td>Malting, changes during, 73</td>
<td></td>
</tr>
<tr>
<td>compartment system, 77</td>
<td></td>
</tr>
<tr>
<td>drum system, 76</td>
<td></td>
</tr>
<tr>
<td>end of, 74</td>
<td></td>
</tr>
<tr>
<td>floor system, 76</td>
<td></td>
</tr>
<tr>
<td>yield in, 78</td>
<td></td>
</tr>
<tr>
<td>Maltose, 5, 10</td>
<td></td>
</tr>
<tr>
<td>Mash tun, 102</td>
<td></td>
</tr>
<tr>
<td>Mashing, 101, 104</td>
<td></td>
</tr>
<tr>
<td>American practice, 117</td>
<td></td>
</tr>
<tr>
<td>Mass Action Law, 17</td>
<td></td>
</tr>
<tr>
<td>Massecuite, 146</td>
<td></td>
</tr>
<tr>
<td>Methanol, detection of, 296</td>
<td></td>
</tr>
<tr>
<td>Methyl alcohol, determination of, 291-293</td>
<td></td>
</tr>
<tr>
<td>Methyl-glyoxal, 22</td>
<td></td>
</tr>
<tr>
<td>Milk, in fining liqueurs, 198</td>
<td></td>
</tr>
<tr>
<td>in fining wine, 177</td>
<td></td>
</tr>
<tr>
<td>Molasses, 146</td>
<td></td>
</tr>
<tr>
<td>Molds, 52, 56</td>
<td></td>
</tr>
<tr>
<td>Monosaccharides, 4</td>
<td></td>
</tr>
<tr>
<td>Mucor, 56</td>
<td></td>
</tr>
<tr>
<td>Munson and Walker's Table, 320-325</td>
<td></td>
</tr>
<tr>
<td>Must, 51</td>
<td></td>
</tr>
<tr>
<td>sterilization of grape, 173</td>
<td></td>
</tr>
<tr>
<td>wine, composition of, 162</td>
<td></td>
</tr>
<tr>
<td>Mycoderma vini, 54, 55, 58</td>
<td></td>
</tr>
<tr>
<td>Neutral whiskey, definition, 233</td>
<td></td>
</tr>
<tr>
<td>“Nigger rum,” 144</td>
<td></td>
</tr>
<tr>
<td>Nitrates, in wine, detection of, 286</td>
<td></td>
</tr>
<tr>
<td>Nitrogen, determination of, 282</td>
<td></td>
</tr>
<tr>
<td>“Noble Mold,” 57</td>
<td></td>
</tr>
<tr>
<td>Noyaux, 219</td>
<td></td>
</tr>
<tr>
<td>Oats, average composition of, 33</td>
<td></td>
</tr>
<tr>
<td>occurrence, 32</td>
<td></td>
</tr>
<tr>
<td>yield from, 33</td>
<td></td>
</tr>
<tr>
<td>Open fermentation, 168</td>
<td></td>
</tr>
<tr>
<td>Orange flower cream, 220</td>
<td></td>
</tr>
<tr>
<td>Oxydase, 57</td>
<td></td>
</tr>
<tr>
<td>control of by SO₂, 62</td>
<td></td>
</tr>
<tr>
<td>Oxygen, 17</td>
<td></td>
</tr>
<tr>
<td>Parfait Amour, 221</td>
<td></td>
</tr>
<tr>
<td>Patent still, 87, 88</td>
<td></td>
</tr>
<tr>
<td>yield from, 114</td>
<td></td>
</tr>
<tr>
<td>Pelargonic ether, 148</td>
<td></td>
</tr>
<tr>
<td>Penillium glaucum, 56, 58, 59</td>
<td></td>
</tr>
<tr>
<td>Pentosans, determination of, 263-285</td>
<td></td>
</tr>
<tr>
<td>Pepsin, 13</td>
<td></td>
</tr>
<tr>
<td>Phosphates, rôle in fermentation, 20</td>
<td></td>
</tr>
<tr>
<td>Phosphoric acid, determination of, 277</td>
<td></td>
</tr>
<tr>
<td>Pineapple Liqueur, 222</td>
<td></td>
</tr>
<tr>
<td>Pinette, 170</td>
<td></td>
</tr>
<tr>
<td>Plaster of Paris, in wine, 175</td>
<td></td>
</tr>
<tr>
<td>Plumule, of malt, 74</td>
<td></td>
</tr>
</tbody>
</table>

**INDEX**

<table>
<thead>
<tr>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polysaccharides, 4</td>
<td></td>
</tr>
<tr>
<td>Pot ale, 105</td>
<td></td>
</tr>
<tr>
<td>Potassium metabisulphite, use of, 174</td>
<td></td>
</tr>
<tr>
<td>Pot still, with rectifier, 85</td>
<td></td>
</tr>
<tr>
<td>yield from, 113</td>
<td></td>
</tr>
<tr>
<td>Production of distilled spirits, 327, 336</td>
<td></td>
</tr>
<tr>
<td>Protein, determination of, 282</td>
<td></td>
</tr>
<tr>
<td>rôle in fermentation, 24</td>
<td></td>
</tr>
<tr>
<td>Proteolysis, 72</td>
<td></td>
</tr>
<tr>
<td>Protoplast, 46, 47</td>
<td></td>
</tr>
<tr>
<td>Pseudo-yeasts, 52, 54</td>
<td></td>
</tr>
<tr>
<td>Punch Liqueur, 222</td>
<td></td>
</tr>
<tr>
<td>Pyruvic acid, 22</td>
<td></td>
</tr>
<tr>
<td>Quince Brandy, 222</td>
<td></td>
</tr>
<tr>
<td>Racking, 171</td>
<td></td>
</tr>
<tr>
<td>Raffinose, 4, 15</td>
<td></td>
</tr>
<tr>
<td>Ratafia de cassis, 209</td>
<td></td>
</tr>
<tr>
<td>Ratafia de cerises, 212</td>
<td></td>
</tr>
<tr>
<td>de Coings, 222</td>
<td></td>
</tr>
<tr>
<td>de Framboises, 223</td>
<td></td>
</tr>
<tr>
<td>Raw Materials, classification, 25</td>
<td></td>
</tr>
<tr>
<td>Rectification, definition, 79</td>
<td></td>
</tr>
<tr>
<td>Rectifier, 90</td>
<td></td>
</tr>
<tr>
<td>Recuperator, 92, 94</td>
<td></td>
</tr>
<tr>
<td>Red wine, difference from white wine, 159</td>
<td></td>
</tr>
<tr>
<td>manufacture of, 163</td>
<td></td>
</tr>
<tr>
<td>Reflux, definition, 79</td>
<td></td>
</tr>
<tr>
<td>Refractometer, immersion, table for wood alcohol, 294</td>
<td></td>
</tr>
<tr>
<td>tables for alcohol, immersion, 308-319</td>
<td></td>
</tr>
<tr>
<td>Resins, in alcohol, 91</td>
<td></td>
</tr>
<tr>
<td>Rose liqueur, 223</td>
<td></td>
</tr>
<tr>
<td>Rum, analyses of, 254, 255, 256</td>
<td></td>
</tr>
<tr>
<td>classification of, 144</td>
<td></td>
</tr>
<tr>
<td>description of, 143</td>
<td></td>
</tr>
<tr>
<td>essence, 148</td>
<td></td>
</tr>
<tr>
<td>Rye, average composition of, 30</td>
<td></td>
</tr>
<tr>
<td>botanical description, 30</td>
<td></td>
</tr>
<tr>
<td>yield from, 30</td>
<td></td>
</tr>
<tr>
<td>Rye whiskey, aging of, 129</td>
<td></td>
</tr>
<tr>
<td>description, 99</td>
<td></td>
</tr>
<tr>
<td>Saccharomyces apiculatus, 53, 54, 55, 58</td>
<td></td>
</tr>
<tr>
<td>cerevisiae, 50</td>
<td></td>
</tr>
<tr>
<td>ellipsosideus, 49, 51, 53, 54</td>
<td></td>
</tr>
<tr>
<td>mycoderma, 51</td>
<td></td>
</tr>
<tr>
<td>pastorianus, 51, 53, 54</td>
<td></td>
</tr>
<tr>
<td>Saccharose, 5</td>
<td></td>
</tr>
<tr>
<td>Schnapps, 154</td>
<td></td>
</tr>
<tr>
<td>Scotch whiskey, 99</td>
<td></td>
</tr>
<tr>
<td>F.A.C.A. definition, 233</td>
<td></td>
</tr>
<tr>
<td>manufacture of, 103</td>
<td></td>
</tr>
<tr>
<td>Secondary products, in whiskey, 109</td>
<td></td>
</tr>
<tr>
<td>Seeds, average composition, 36</td>
<td></td>
</tr>
<tr>
<td>Simple distillation, 79</td>
<td></td>
</tr>
<tr>
<td>“Smoothen,” 149</td>
<td></td>
</tr>
<tr>
<td>Sour mash, 100</td>
<td></td>
</tr>
</tbody>
</table>
INDEX

Sparger pipe, 93
Sparkling wine, definition, 159
U. S. Dept. Agr. definitions, 237
Specific gravity, determination of, 260, 286
tables for alcohol, 302-307
Spent lees, 105
Spirit plate, 90
Spirits, in bond, 333
Spores, 48
Starch, acid conversion, 78
classification of granules, 7
conversion, 9
hydrolysis, 9
pressure cooking of, 117
properties, 7, 8
thick or thin-boiling, 8
Starters for wine, natural, 67
preparation, 67, 68
pure culture, 68
Stemming, 165
Still, continuous rectifying, 93, 94
definition, 79
simple pot, 82
unique, 97
Still wine, definition, 159
Straight whiskey, F.A.C.A. definition, 233
Strawberry cordial, 223
Submerged fermentation, 168
Sucrose, 5
determination of, 271
Sugar cane juice, composition of, 145
Sugar, density of solutions, 298-301
function of, in must, 162
Sugars, determination of, 267-275, 291
Sulphuric acid, determination of, 277
Sulphur, use of, 174
Sweet mash, 100
Sweet wine, definition, 158
U. S. Dept. Agr. definition, 236

Tannin, addition of, 176
determination of, 281
function of, 162
Tartaric acid, 168
determination of, 280
Taxes, collected on liquor, 332, 344
Tirage, 183
Torulae, 54
"Tranchage," 194
Trappistine, 223
Trisaccharides, 4
Turpentine, in gin, 150

Unfortified wine, definition, 158
Unicurs Bitters, 27
Urease, 13
"Usquebaugh," 96

Vacuoles, 47
Vat stills, 147
Vermouth, French, 228
Italian, 228
Vespetro, 224
Vinegar bacteria, 59
Vodka, 154
Volatile acids, determination of, 279

Wash, 84
Wash stills, capacity of, 85, 107
Water, use of, 103
Wheat, average composition, 35
botanical description, 34
classification, 34
Whiskey, analyses of, 242-251
blending of, 136
Bourbon, description, 99
conclusions from analysis of, 249, 252
definition, 99
distillation of, 105, 106
dosing of, 134
F.A.C.A. classification, 232
F.A.C.A. definitions, 233
fermentation of, 104
Irish, 100
origin, 96
patent still, British, 107
recovery of, 112
rye, description, 99
Scotch, 99
sour mash, 100
statistics on, 333-341
sweet mash, 100
tax history, 96, 97, 98
U. S. Pharmacopoeia requirements for, 232
yield of, 112
Whiskey types, 102
White chartreuse, 211
White wine, difference from red wine, 159
manufacture of, 173
Wine, acid-alcohol ratio in, 259
aeration of fermented, 172
alcohol-extract ratio in, 259
classification of, 158
conclusions from analysis of, 256, 259
consumption of, 329, 347
correction of, 175
defecation, 67
examination of, 260
extract in, 266
fining of, 176
functions of, 160
general definition, 155
industry, started in U. S., 37
Wine, lees, 141
  names considered, 157
  pasteurization of, 172
  plastering of, 175
  pressing of, 170
  starters for, natural, 67
  starters for, pure culture, 68
  statistics on, 344-347
  U. S. Dept. Agr. definition, 235
Wines, analyses of, 257, 258
  low, 84
Withdrawals, of distilled spirits, 337
Wort, American practice, 115, 117
  for yeast production, 65
  preparation of, 104
  preparation for British whiskey, 110

Yeast, commercial production, 63, 64
  distiller's, production of, 65, 66
Yeast juice, 16
Yeast, classification, 49
  effect of alcohol on, 58
  effect of SO2 on, 61
  mode of growth, 47
  pure culture, 50
  relation to acids, 61
  relation to oxygen, 60
  relation to temperature, 61
  wild, 50
Yellow chartreuse, 211
Zymase, 16
Zymogen, 15