

APPENDIX A  
LIST OF PHOTOGRAPHS OF THE  
DISTILLERY OF GOODERHAM & WORTS LIMITED  
1916-1918  
CITY OF TORONTO ARCHIVES, SC 583

City of Toronto Archives, British Acetones Collection, SC 583

PHOTOGRAPHS OF THE DISTILLERY OF  
**GOODERHAM & WORTS LIMITED**  
TORONTO, CANADA

OPERATED BY  
**BRITISH ACETONES TORONTO LIMITED**  
(IMPERIAL MUNITIONS BOARD)

**FOR THE MANUFACTURE OF ACETONE AND CORDITE KETONE**

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**COL. A. E. GOODERHAM**  
MANAGING **DIRECTOR**

**CAPT. A. E. GOODERHAM**  
**ASST. MANAGING DIRECTOR**

***Construction Staff:***

E. METCALFE SHAW, Wh. Sc., **Assoc. M. Inst. C.E.**,  
Chief Engineer.

J. H. **PARKIN**, BA Sc., **Mechanical** Engineer.

D. J. THOMSON. BA **Sc.** **Electrical** Engineer.

FRANK W. BARRON, Mechanical Superintendent.

***Operating Staff:***

H. B. SPEAKMAN, M. Sc., **Bacteriologist.**

D. **ALLISTON** LEGG, F.I.C., **Chemist.**

MARGARET D. **BOWES**, Matron.

W. CHARLES **COLLETT**, BA Sc., Architect.,

**T**HE BRITISH ACETONES TORONTO LIMITED was formed early in 1916 for the purpose of manufacturing acetone from corn by the newly discovered Weizmann Bacteriological process. The shareholders of Gooderham & Worts Limited, and afterwards of the General Distilling Co., patriotically placed their plants at the disposal of the British Government, free of charge, for the duration of the war.

The British Government asked for 250 tons of acetone in fifteen months. The plant actually produced 1,080 tons in the first fifteen months, and a total of 2,850 tons during the whole period of operation from August, 1916, to November, 1918, and was producing at the rate of eight tons per day, or forty-eight tons per week, during the last months.

Canada produced seventy-eight per cent. of the acetone in the British Empire, of which seventy-five per cent. was supplied by the British Acetones Toronto Limited, making nearly sixty per cent. of the total output of acetone of the British Empire.

In 1917 permission was granted for the building of a plant for the conversion of butyl alcohol into methyl ethyl ketone by a process perfected in Toronto. The plant was constructed, and had just begun producing methyl ethyl ketone when the mole plant was closed down following the signing of the armistice.

The following pages give a photographic record of the development of the plant, and a description of the various sections of the plant, and interesting and vital pieces of equipment and apparatus.

## BRITISH ACETONES, TORONTO, LIMITED

| Page. | Photo No. | Description.   |
|-------|-----------|--|
| 1     | 10        | Original Staff of the British Acetones, from left to right:—<br>Mr. M. Laughlin, Assistant Constructing Engineer.<br>Captain A. E. Gooderham, Assistant General Manager.<br>Mr. J. Leys Gooderham, Assistant Chemist.<br>Mr. E. Metcalfe Shaw, Chief Engineer.<br>Mr. H. B. Speakman, Bacteriologist.<br>Col. A. E. Gooderham, General Manager.<br>Mr. J. W. Hayward, Constructing Engineer.<br>Mr. D. Alliston Legg, Chemist. |
| 2     | 148       | Mr. Speakman, Bacteriologist, and his Staff in the Fermentation Department.  |
| 3     | 152       | Mr. Legg and his Laboratory Staff.   |
| 4     | 151       | Mr. Legg with his Acetone and M.E.K. Staffs.   |
| 5     | 156       | Mr. Shaw with his Engineering, Drafting, and Office Staffs.  |
| 6     | 60        | General View of the British Acetone Plant.   |
| 7     | 167       | Bird's-Eye View of Plant.  |
| 8     | 62        | View of the Plant from the west, showing the Butyl Tank, capacity 1½ million gallons; Boiler House, with Distillery and Mill in the distance.  |
| 9     | 61        | View looking south on Trinity Street, showing to the right the M.E.K. Still, and Tank Houses and Storage Coal Shed in the distance; on the left the Butyl Rectifying Stills.   |
| 10    | 153       | British Acetone Building, formerly G. & W. Barrel Wash House.  |
| 11    | 154       | Interior British Acetone Office.   |
| 12    | 64        | G. & W. Elevator.  |
| 13    | 63        | View looking south, showing the G. & W. Elevator to the right, Coal Shed to the left with piles of coal between, the Drum Cleaning Room and the Fermenting Cellar.   |
| 14    | 65        | Machinery for Moving and Unloading Corn in the Elevator.   |
| 15    | 66        | Interior of top of Elevator showing Belt Conveyor.   |
| 16    | 67        | Another view showing the Tripper.  |
| 17    | 108       | West Boiler House, showing Babcock and Wilcox Boilers.   |
| 18    | 109       | Showing Pumps, Auxiliaries, Emergency Electric Light Plant and Fans for Boilers.   |
| 19    | 110       | East Boiler House, showing battery of eight Boilers.   |
| 20    | 111       | View of top of these Boilers.  |
| 21    | 77        | Four Tubular Boilers held in reserve.  |
| 22    | 68        | G. & W. Main Building, containing Mill, Mashing and Fermenting Departments; on the right are G. & W. Offices.  |
| 23    | 86        | View of same building, from the west.  |
| 24    | 78        | Mill Engine in Distillery Building.  |
| 25    | 69        | Ground Floor Mill, showing machinery for driving Millstones and Rolls.   |
| 26    | 70        | Another view of same.  |
| 27    | 71        | 2nd Floor of Mill, showing Millstones and Rolls.   |
| 28    | 72        | Scalper for removing Bran from Meal.   |
| 29    | 73        | Weighing meal into Mash Tubs.  |
| 30    | 75        | Ground Floor, showing Air Compressors and Machinery for driving the Mash Tubs.   |
| 31    | 74        | Showing control of Mash Tubs.  |
| 32    | 76        | Mash Digester. This raises the temperature of the Mash from 206 degrees Fah. to 240 degrees while driving from the Mash Tubs to the Cookers.   |
| 33    | 89        | Distillery Department of the General Distillery Company—lower part of the building being the Chemist's Laboratory.   |
| 34    | 112       | Switch House, controlling Electric Circuits throughout the Fermentation Room and Distillery.   |
| 35    | 1         | Bacteriological Laboratory, showing in the foreground Mr. F. H. Carter, who had charge of the Terre Haute Plant, and Mr. Speakman, at the microscope, who was in charge of this Plant.   |
| 36    | 2         | Bacteriological Laboratory. Cooling Room showing Sterilizers and Incubators.   |
| 37    | 146       | Bacteriological Laboratory.  |
| 38    | 147       | Showing enlargement of Bacteriological Laboratory with Experimental Fermentation Tank.   |
| 39    | 3         | Showing the Bacteria in different stages of growth.  |
| 40    | 28        | The Inoculator Room, showing Culture Vessels and Inoculators.  |
| 41    | 29        | The Culture Vessels with all connections.  |
| 42    | 31        | Showing Inoculators with all necessary connections.  |
| 43    | 32        | Near View of Seed Tanks with connections.  |
| 44    | 30        | General View of Seed Tank Room.  |
| 45    | 79        | Showing Fermentation Room with Boiler House on extreme right, Still House in centre, Sulphuric Acid Concentration Building with the hipped roof, M.E.K. Building, and the Mill and Elevator in the distance.   |
| 46    |           | Showing Fermenting Tanks with Gas Drums as originally installed. These Gas Drums, being a source of contamination, were discarded, and Gas Traps, as shown on page 49, were installed.   |
| 47    | 20        | Showing the Cookers and Seed Tanks with the Inoculator Room in the distance.   |
| 48    | 80        | Showing the Cookers.   |
| 49    | 21        | Fermenting Room, looking east.   |
| 50    | 53        | Fermenting Floors, showing Cookers and Fermenters.   |
| 51    | 18        | Another view of Fermenting Room.   |
| 52    | 19        | Showing fittings on Fermenters.  |
| 53    | 83        | Fermenting Room, formerly part of G. & W. Barrel Wash House.   |
| 54    | 84        | Connections for filling and emptying Fermenters.   |
| 55    | 17        | Original Cooler.   |
| 56    | 16        | Another view of Original Cooler.   |
| 57    | 15        | Another view of Original Cooler.   |
| 58    | 12        | Improved Cooler designed by Mr. E. M. Shaw.  |
| 59    | 13        | Another view of Improved Cooler.   |
| 60    | 14        | Another view of Improved Cooler.   |

## BRITISH ACETONES, TORONTO, LIMITED

| Page. | Photo No. | Description.  |
|-------|-----------|---|
| 61    | 81        | <b>Pumps, Coolers and Cookers.</b>  |
| 62    | 82        | Another view of <b>same.</b>  |
| 63    | 54        | Another view of <b>same.</b>  |
| 64    | 85        | <b>Engines and Pumps for pumping the Fermented Mash to the Beer Sump.</b>                                   |
| 65    | 87        | G. & W. Fermenting <b>Tanks, into</b> which foaming tanks are pumped.                                       |
| 66    | 88        | Pumps for pumping from Beer Sumps to Beer Stills.   |
| 67    | 149       | Mr. <b>Legg</b> and two of his <b>Assistants</b> in the <b>Chemical Laboratory.</b>                         |
| 68    | 4         | <b>Chemical Laboratory.</b>   |
| 69    | 150       | Routine <b>Laboratory.</b>  |
| 70    | 6         | Original Beer Still and Tale Box.   |
| 71    | 90        | Beer Still and Tale Box, showing two Beer Stills made necessary by the enlargement of the <b>Plant.</b>     |
| 72    | 92        | Rectifying Kettles and Badger <b>Rectifying Still for Acetone.</b>  |
| 73    | 93        | Foot of columns on <b>Rectifying Kettles and</b> Emergency Pump for Beer Stills on floor above.             |
| 74    | 96        | Showing Goose <b>Tanks, Beer Heaters, etc.,</b> in Acetone Distillation Department.                         |
| 75    | 7         | <b>Rectifying Columns, Condensers, Tale Boxes and Gauging Vessels</b> in Acetone Redistillation Department. |
| 76    | 94        | <b>Another view of same.</b>  |
| 77    | 95        | Showing Badger Continuous Rectifying Still.   |
| 78    | 91        | Connections at bottom of Acetone Tanks.   |
| 79    | 97        | Receiving Tanks for Pure Acetone prior to being shipped.  |
| 80    | 99        | Drum Cleaning Department.   |
| 81    | 98        | Filling Drums ready for shipment.   |
| 82    | 8         | <b>Shipping Room, showing consignment ready to be shipped.</b>  |
| 83    | 9         | Showing the ends of the Drum.   |
| 84    | 100       | The Butyl Salting Plant with Storage <b>Tanks and Drums.</b>  |
| 85    | 101       | The Butyl Rectifying <b>Stills, formerly G. &amp; W. Alcohol Rectifying Department.</b>                     |
| 86    | 102       | Butyl Rectifying <b>Stills.</b>   |
| 87    | 103       | <b>Operating Floor, showing Tale Boxes and Controls of the Butyl Rectifying Stills.</b>                     |
| 88    | 104       | Showing Tank Houses containing Rectified Butyl and <b>Alcohol Tank Rooms.</b>                               |
| 89    | 105       | <b>Butyl Storage, showing racking off Rectified Butyl into Drums.</b>                                       |
| 90    | 106       | Showing Butyl in Steel <b>Drums ready</b> to be shipped.  |
| 91    | 107       | Loading Butyl into cars.  |
| 92    | 37        | Construction <b>Staff</b> of Acid Concentrators.  |
| 93    | 22        | <b>Acid Concentrators under</b> construction.   |
| 94    | 23        | Same.   |
| 95    | 35        | Same.   |
| 96    | 36        | <b>Same.</b>  |
| 97    | 51        | Foundations of Add Concentrators.   |
| 98    | 46        | Stairs leading to top of Concentrators.   |
| 99    | 47        | Oil Burner on concentrator.   |
| 100   | 129       | Improved Oil Burning <b>Installation.</b>   |
| 101   | 49        | Motor and Fan for Exhausting Vapors from <b>Acid Concentrators.</b>   |
| 102   | 50        | Feed Tank and Measuring <b>Box</b> for Concentrators.   |
| 103   | 48        | <b>The Cooling Boxes for Add passing from Concentrator to Storage Tank.</b>                                 |
| 104   | 52        | Acid Storage Tank.  |
| 105   | 130       | Same.   |
| 106   | 140       | <b>Shaw's Improved Heat Interchanger.</b>   |
| 107   | 138       | <b>Shaw's Acid Concentrator.</b>  |
| 108   | 166       | Sections of above.  |
| 109   | 124       | <b>Transformer House.</b>   |
| 110   | 40        | Transformers on car which had been in a collision.  |
| 111   | 39        | <b>Same.</b>  |
| 112   | 38        | <b>Same.</b>  |
| 113   | 125       | Interior of Transformer House.  |
| 114   | 27        | Switch House, showing Barrel Rheostats.   |
| 115   | 26        | Another view of same.   |
| 116   | 126       | View of Enlarged Switchboard.   |
| 117   | 127       | Back view of Switchboard.   |
| 118   | 113       | M.E.K. Building.  |
| 119   | 33        | Experimental M.E.K. Plant.  |
| 120   | 34        | Another view of same.   |
| 121   | 136       | Furnaces under construction for burning <b>first stage Catalyst.</b>  |
| 122   | 137       | Furnaces for burning third stage Catalyst.  |
| 123   | 128       | Electrical Workshop where heaters for Catalysts were <b>constructed.</b>                                    |
| 124   | 25        | Catalyser Heaters under construction.   |
| 125   | 58        | <b>Catalyser Patterns.</b>  |
| 126   | 163       | Catalyser Cores and <b>Moulds.</b>  |
| 127   | 164       | Catalyser Cores and Moulds.   |
| 128   | 24        | The Catalyser.  |
| 129   | 165       | Shipment of Catalysts.  |
| 130   | 114       | <b>The Catalyser Room, showing twelve Catalysts set up and in operation.</b>                                |
| 131   | 115       | Another view of Catalysts.  |
| 132   | 41        | Variable Feed Pump for <b>Catalyser.</b>  |
| 133   | 42        | Temporary <b>Experimental Catalyser</b> Connections to <b>facilitate obtaining of experimental data.</b>    |
| 134   | 45        | Coolers—same principle as shown on pages 58, 59, 60.  |
| 135   | 57        | Heat <b>Interchanging</b> Room of first stage <b>M.E.K. Plant.</b>  |
| 136   | 56        | Closer view of same.  |

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| Page. | Photo No. | Description.  |
|-------|-----------|---|
| 137   | 55        | <b>Another</b> view of <b>same</b> .  |
| 138   | 118       | M.E.K. Plant, showing in the left foreground Butyl Gasometer; back-center, Salting Plant; right foreground, Scrubbing Column; left foreground, Scrubbed Liquor Receiver.    |
| 139   | 44        | Temporary Butylene Compressor in the foreground, <b>with</b> Butylene Storage Tanks on the <b>first floor</b> , and <b>the</b> Sulphating <b>Mixer on</b> the ground floor. |
| 140   | 43        | Showing Temporary Butylene Compressor and Separating Equipment:   |
| 141   | 120       | Butylene and Add Storage Tanks.   |
| 142   | 117       | Butylene Compressors and Sulphating Mixer for M.E.K. Plant.   |
| 143   | 139       | <b>Shaw's</b> Patent Sulphating Mixer.  |
| 144   | 116       | Lead Still, Add Tank and bottom of Lead Column for distillation of <b>secondary</b> Butyl from Butyl Hydrogen Sulphate.   |
| 145   | 122       | Feed Tank, <b>Dephlegmator</b> and Condenser for <b>the</b> Lead Still.   |
| 146   | 119       | Bottom of Scrubbing Column for recovering crude M.E.K. <b>from</b> Hydrogen Gas.  |
| 147   | 123       | Tank for Feeding the Lead Still and parts of Still of Scrubber.   |
| 148   | 121       | Storage Tanks in connection with M.E.K. Plant.  |
| 149   | 131       | Still Houses for Rectifying Stills for M.E.K. Plant.  |
| 150   | 132       | M.E.K. Stills supplied by Badger & Son, Boston.   |
| 151   | 133       | Rectifying Columns on M.E.K. Stills.  |
| 152   | 134       | <b>Dephlegmators</b> and Condensers on M.E.K. Stills.   |
| 153   | 135       | Pumps for charging <b>M.E.K.</b> Stills.  |
| 154   | 162       | Drum of pure M.E.K.   |
| 155   | 155       | Drafting <b>Office</b> and Staff.   |
| 156   | 143       | Entrance to M.E.K. Plant, showing Time <b>Office</b> .  |
| 157   | 144       | Interior Time <b>Office</b> and <b>Telephone</b> Switchboard.   |
| 158   | 142       | <b>Store Room.</b>  |
| 159   | 141       | <b>Interior Pipe and Machine Shop.</b>  |
| 160   | 145       | <b>Interior Lunch Room.</b>   |
| 161   | 159       | Lead Vdves and Fittings in connection with Add Concentrator.  |
| 162   | 158       | Gaskets used in M.E.K. Plant.   |
| 163   | 157       | <b>Samples</b> of Metals from which our Catalysers <b>were</b> cast.  |
| 164   | 11        | Fractured Extension Electric Light which caused a slight <b>explosion</b> in the Plant.   |
| 165   | 160       | <b>Staff and Employees, including Contractors' Employees</b> and others temporarily employed.   |
| 166   | 161       | Float <b>representing</b> "In Flanders Field"—Victory Loan Parade, November <b>11th, 1918.</b>  |
| 167   | 169       | Shield awarded <b>the</b> Float as being <b>the</b> Best <b>Float</b> in <b>the</b> Parade.   |
| 168   | 168       | Tobacco Humidor, <b>presented</b> to Col. <b>Gooderham</b> by the <b>Staff</b> of the British Acetones.   |