

MOUNT WELLINGTON MINE, GWENNAP, CORNWALL

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Abstract: Starting in the 1920s as a three-man operation, continued on a larger scale by a public company in the 1930s, this mine was worked as a large concern in the 1960s and 70s. This account traces the difficulties encountered during these workings and the unsolved problems which led to the mine's final closure in 1978, and ends with a history of the site up to the present day. Dressing problems, the poor tin price, and the failure of the expensive management to notice that much of the water pumped out of the mine was trickling back into it because the adit had been driven on a fault, were the main causes of the final abandonment. Figures have been added in parentheses so that the results of the various workings can be compared in units of measurement used in Cornwall for over a century preceding the mine's closure.

EARLY 20TH CENTURY ORIGINS

Once known as the Magpie Mine, this mine lay on the western bank of the Carnon Valley in Gwennap, and had originally formed part of the United Mines, a large copper producer. Some twenty years after those mines last worked three brothers named Wellington were mining the property in a small way, hoisting the ore with a horse and dressing it at a little five-head Cornish stamps down the valley. At this time the adit was choked and the brothers used a small shaft up the hillside to gain access to a lode some forty or fifty feet from surface. The ore was understood to average 30 lb. of black tin to the ton or, in modern parlance, 1.3392857%). During the working the ground around the shaft gave way, and put it out of action. The brothers did not have the money needed to open the adit or to sink another shaft and abandoned their workings. When this took place is not known, though in late autumn of 1930 it was reported, possibly only on the basis of hearsay, that four miners were working a wide lode there and making a success of it.

THE 1930s COMPANY

After rumours of change had been circulating for nearly five years, the lease of the property passed early in 1934 to Argus Concessions Ltd., a private company formed in 1926 by Major R.C.N. Robinson, M.C., MIMM., mining and consulting engineer of London (died 1939). Meanwhile, in May 1929 it was reported that Argus was exploring an outcropping ore-body near Wheal Andrew, also formerly part of the United Mines.

The delay in the transfer of the property to Argus was due to difficulties in establishing a good title to the land and minerals in question as the area to be leased had been enlarged to include several neighbouring properties as well as Mount Wellington. In May 1930 Argus acquired a 12-month license to prospect for tin and other minerals, with the option to apply for a 35-year lease to be granted to a limited liability company. The grantors were James Rowe Wellington of Creegbraws and John Howard Fox of Wellington, Somerset, and Col. the Hon. Henry Walter Forbes Trefusis of Trefusis in Mylor. The licence was extended in May 1931, August 1933 and December 1934, and was eventually amended to exclude ochre clay and certain rights for working it. In December 1934 the terms were altered again so that on the lease being granted the grantors would receive £12,500, of which £3,125 would be cash and £9,375 in 93,750 2s. (two shillings - nominally 10p nowadays) shares credited as fully paid, in *Mount Wellington Ltd.*, a public company

registered in October 1934 and to whom the property was transferred by Argus early in 1935.

The shares in Mount Wellington Ltd. were offered for sale in January 1935 and were quoted on the Stock Exchange. The prospectus stated that the property acquired from Argus covered about 328 acres in the district of Cosgarne (part of Gwennap), and that the Mount Wellington mine had last been worked by streamers some twelve years earlier. The Mount Wellington lode was "more or less virgin", and with tin metal as low as £160 per ton a return of 16½% was indicated on a recovery of no more than 30 lb. of black tin to the ton, with costs of 16s. to 17s. per ton of ore treated. It was estimated that within six months of the necessary plant being provided it would be possible to develop 150,000 tons of ore. When sampled the lode had been found to be at least 25 feet wide and gave 42 lb. of black tin to the ton, according to Josiah Paull, MIMM; J.P., former general manager of South Crofty mine, near Camborne, a director of the company and an eminent mining engineer, and G.W. Rudyerd, ARSM., AIMM. The purchase consideration was £45,000, of which £5,000 was in cash and the balance in 400,000 2s. shares credited as fully paid. In any year in which a 10% dividend was paid 5% with a maximum of £1,000 of the net profits available for distribution belonged to the directors. The authorised capital was 1,500,000 2s shares, but only 1,320,535 were in issue at the end of 1937.

Of the fully paid shares issued as part of the purchase consideration, 25,000 were transferred to Anthony Thomas Cecil Hawkins of Hicks Mill, Bissoe, in consideration of his services in supervising the property during the currency of the grant. A further 20,000 shares went to the Netherlands Finance Co. Ltd., who had agreed to underwrite the 649,993 shares offered for public subscription and an overriding commission of 1%, payable by the Mount Wellington company, plus options on 320,000 unissued shares at par, 2s., on 20,000 shares at 2s. 6d and on 150,000 shares at 3s. per share. The offer added that "expert opinion substantiated the existence of very large bodies of ore on the company's property . . . with an exceptional width of lode which could be mined without pumping at a very low cost".

When in February 1935 the 649,993 shares were offered at par, subscribers received an option until 30th June 1936, later extended to 30th June 1939, to take up one share at 2s.6d. for every five shares allotted. The offer noted that the black tin obtained in vanning had a chemical assay of 68% metal which, with tin metal at £220 per ton, gave the ore an average value of 56s.1d. per ton, "highly payable" and well above the county

average. The mine had the advantage of electricity from the "grid" and drainage by the County Adit. The *West Briton* newspaper commented that although the prospectus gave an issued capital of £150,000 the actual working capital was only £46,000.

In April 1935 the Cornwall correspondent of the *Mining Journal* noted that the company's money was being spent under ground, and that a powerhouse was being erected. The *Mining World* commented in May that although the company's shares did not cut a very good picture in the market steady progress was being made at the mine. Development had started, two shafts 400 feet apart known as the Robinson and the Wellington having been completed to adit. Driving from the eastern one had advanced 20 feet in values averaging 32 lb. of black tin to the ton over a width of 6 feet. In driving 24 feet westwards from the Wellington shaft the values averaged 40 lb. per ton over 6 feet. Progress was expected to be more rapid when a 1,000 cubic feet air compressor was running. Drives were being made eastwards from Robinson shaft to meet Wellington shaft, and surface works included a 100 x 40 feet steel-framed corrugated iron engine and machinery house, assay office, mine office, carpenters' shop, transformer and switch-house.

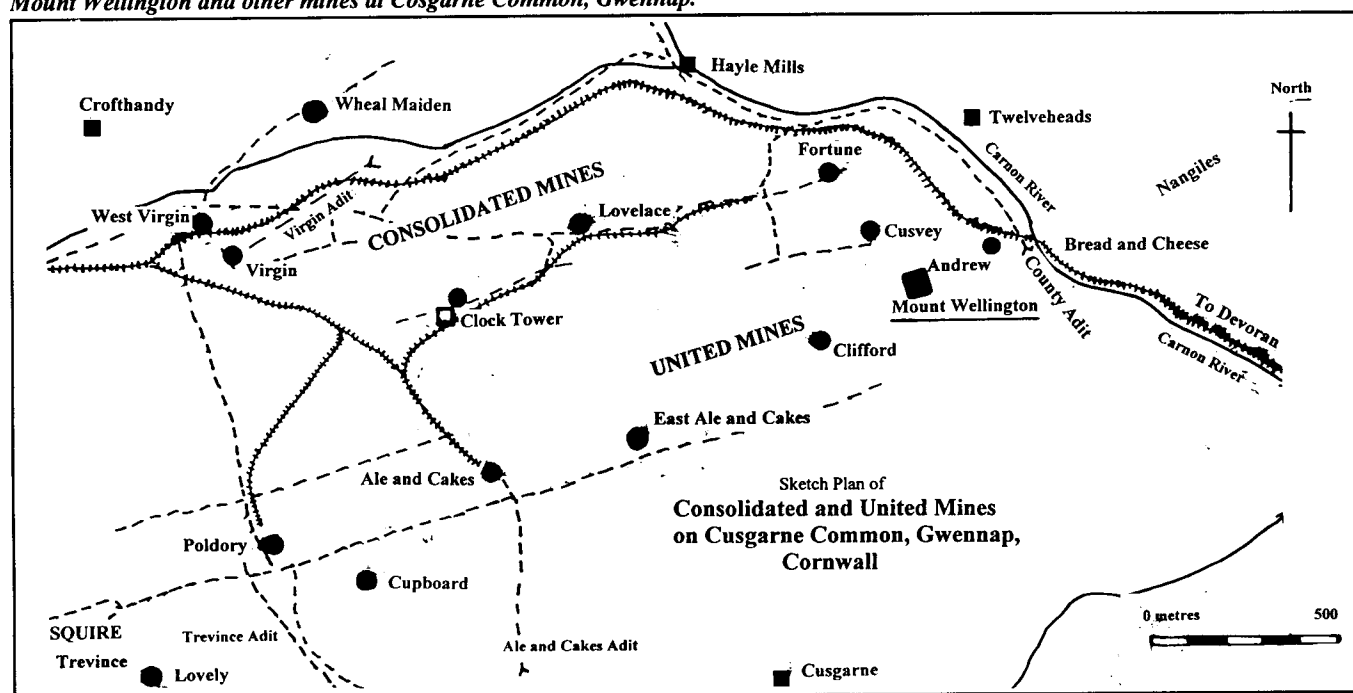
In June 1935 the old stopes were cleared to adit and it was reported that the lode had been found to dip almost 35° north. A large part of it to the west had been opened, showing 20 to 70 lb. of black tin to the ton. A fault had been cut through and ore had been found beyond it which gave satisfactory values. The hanging wall was a porphyry (elvan) dyke, the footwall slate (killas) and clay. The mine was in a clearly-defined mineralised belt where mining had only been carried to a shallow depth. A progress report the following month stated the lode was 20 to 40 feet wide and contained an estimated 150,000 tons of payable ore ready for the mill. The 150-250 tons per day dressing plant was expected to be working within nine months. Despite all these optimistic indications the shares fell to 1s.3d. in October 1935, and were thought by the *Mining World* to be "a good speculation for better prices", though earlier in the year they had been only 3d.

By the end of October 1935 the main adit had been cleared about 1,400 feet, making 1,800 feet since the company's

formation, and 478 feet driven on the lode had been enlarged to make the main tramping level from the eastern section. Some 450 feet of subsidiary adits had also been cleared, enlarged and timbered, to give access to other lodes parallel to the main ore body. In addition, 1,015 feet of old shafts on the strike of the lode had been cleared, the lode had been driven on for 600 feet westward since the last report, and 285 feet of cross-cutting, 100 feet of winzes and 100 feet of raises had also been completed. At surface the stamping mill and mill buildings had been delivered on site, the foundations had been completed and the first bay of the ore bin had been built. As values underground had fallen off, the completion of the mill building had been delayed. The unpayable values extended over 200 feet on the main branch of the lode before it became payable again. Further work was in progress on the main lode and ore bodies near it were being explored: one known as Trenergy's had been worked out above adit and there were some very good values in some places where it had been left standing. It had not been worked below adit. Electric light had been put in and the new power plant ran without a hitch during the period under review.

The first annual general meeting was held towards the end of December 1935. The report stated that the ground opened showed values between 40 and 18 lb. of black tin per ton. Above adit about 100,000 tons of ore were available for stoping, the average grade being 25 lb. of black tin per ton over a stoping width of 25 feet, though in places it was considerably wider. The balance sheet for the eight months from 6th February to 30th September showed that 400,000 shares had been issued credited as fully paid and 650,485 for cash, making a capital of £105,048.10s., of which £1,273.4s. was in arrears but since reduced to £839.10s., which was now in the hands of the company's solicitor for collection. Several shareholders had already exercised their options to take up shares at 2s.6d., of which 6d. per share had been credited to the share premium account. Sundry creditors, the company's total liabilities, were £1,407.8s.3d. The mineral rights stood at £45,528.10s., the cost of the acquisition plus £528.10s. for (stamp) duty and transfer of the rights. The land and buildings were £1,378.15s.11d., and included the cost of a bungalow, office building, compressor house and workshop, explosives' hut and dry. Fixed plant and machinery stood at £9,640.15s.1d., and loose plant and tools at £1,097.1s.7d. The development account came to £10,460.16s.7d.

Mount Wellington and other mines at Cosgarne Common, Gwennap.



and covered the cost of all underground work. The administration account showed a total of £1,050.5s.6d., which covered the furnishings and equipment of the office and bungalow. A second-hand lorry and a second-hand car together cost £122, and an investment in £1,032.15s.6d. in local authority 3% loans was permanent and had been made to give security to the mineral lords for the fulfilment by the company of the covenants under the lease, the company receiving the interest. An item of £21,589.15s.9d. cash and deposit included £461 paid to the electricity supply company as security, and the balance of £21,128.15s. 9d. was cash remaining out of the proceeds of the shares issued in February, after paying preliminary expenses and underwriting commission amounting to £12,594, of which £5,528 was the cash portion.

Following satisfactory developments underground in February 1936, including the opening up of a level at 70 feet below adit, driven from Friendship shaft, which showed a further deposit of probable ore of 80,000 tons, the board decided to make arrangements to erect the first section of the dressing plant with a daily capacity of 40 to 50 tons, as a start to a 200 tons per day plant. By June four heads of stamps were crushing ore, which was of a higher grade than that first met with and containing less pyrite. In August and September the first unit of the mill was tried out, with satisfactory results, and the foundations of the second unit were nearing completion.

The report to the second annual general meeting at the end of December 1936 stated that there was probably a further 100,000 tons of ore discovered in recent workings, which would be sufficient to keep a large mill working. The first two months of the working of the first unit, with a capacity of 40 tons per day, had shown a profit, and a considerable amount of work had been done on the erection of two more units. For assay purposes the lode was taken at 15 feet wide, though in places it was up to 40 feet. The value of the ore stoped had fully kept up to the figures of assays of samples taken during development, and the average vaning assay of 23 lb. of black tin to the ton had been confirmed by the milling results. Robinson & Co. and Josiah Paul had both stated that the results obtained so far fully justified the board of directors in raising additional capital to pay for the mill, and to extend the underground development. Negotiations to raise additional capital had been begun, and in January 1937 a meeting agreed to create and issue 1,000 £25 6% Convertible Debentures. In February the mill was completed and black tin was being produced. In April the *Mining World* revealed that the mine had the Poldory, Buzza and Ale and Cakes lodes, and that the Poldory lode had been examined and sampled at various points showing that there should be 86,000 tons of ore available. During the summer Robinson shaft was enlarged to three compartments and completed to the required depth. Owing to the alteration and extension of the mill there was no production between March and August. On 1st September three units of the mill were set working, and the production of that month was from an accumulation of rough concentrates produced earlier.

The third annual general meeting, held in December 1937, was told that following visits by two directors of the British (Non-Ferrous) Mining Corporation, Ltd. Carl Davis (late president of the IMM) and E.H. Clifford, and an investigation and report on the

area by Dr Gilbert Wilson, the well-known geologist, an agreement was made with the Corporation. This involved increasing the Mount Wellington capital from £150,000 to £300,000 by the creation of 1.5 million new shares, to be offered at par for cash, the Corporation to have an option on 1.25 million shares up to 30th June 1940, plus an option to take up three-quarters of all future new issues. In addition, J.C. Allan, a director of the Corporation, would join the Mount Wellington board. The options were in bearer form.

The West of England correspondent of the *Mining Journal* reported in March 1938 that the main level had been extended to a point 1,700 feet west of the County Adit. Stopping was confined to this lode over an average width of about 20 feet. Above ground the mill capacity had been increased from 1,000 to 3,000 tons per month, and crushing was by twelve heads of Fraser & Chalmers stamps of 2,000 lb. A medium-grade concentrate was recovered, and the pyrite was floated and stored. These favourable developments justified the arrangements with the Corporation, in view of the intention to increase the milling capacity from 1,000 to 2,000 tons per day should future development justify such a course. Later in the month the crusher station broke down and the mill was only able to run part time, though development underground proceeded normally both laterally at adit level and in connection with shaft sinking. In August it was reported that the company had acquired the Wheal Jane sett to the east, which had last been worked about 1910. Then, "a good deal of development was done, but considerable difficulty was met with in attempts to concentrate the pyritic ore. In those days the flotation method was in its infancy". Nangiles sett was also acquired at about this time.

The annual report for the year to September 1938 was sent out in December. It stated that both Nangiles and Wheal Jane (evidently including West Wheal Jane) sett had been acquired from Lord Falmouth, giving the Mount Wellington company a strike length of about three miles. In the Wheal Jane section it was estimated that there was 1.5 million tons of ore above adit, of a minimum grade of 20 lb. of black tin per ton, and that below adit only 250,000 tons had been stoped. There was a possibility of a million tons of ore for every 100 feet of vertical depth, of an unknown value, but some part of which might be taken to be of a higher grade than that of the ore above adit. In the eastern part of Mount Wellington there were 15,000 tons of ore blocked out, of a value of 26 lb. black tin per ton, and

Mount Wellington in the 1930s. (Photo by courtesy of the Cornwall Record Office, Truro).



available for stoping. The annual general meeting was told that the Mount Wellington area extended to the middle of the Nangiles sett and that continuing eastwards a further length of 3,890 feet had been proved, making a total of 6,340 feet. The lode continued strongly further east, as shown by extensive open workings (by 1979 filled in). Despite dressing difficulties it was expected that modern methods should overcome them, and it was to this problem that the Corporation was directing attention. From the balance sheet the *Mining World* concluded that further capital would have to be raised.

In March 1939 it was reported that the mine had been closed down, having produced tin in the early part of the previous year and carrying out a large amount of development both in the Wellington and Jane sections. A circular sent out at the end of May, covering the period from December 1938 to May 1939, stated that in the present state of metallurgical knowledge it had not been found possible to increase the yield of the mine to a point that would show a profit at conservative metal prices on the greater part of the ore available above adit level. In the circumstances the board had been compelled to use the mine's remaining limited resources to obtain indications of ore below adit level that might be profitable under existing conditions. With this end in view they proposed to test the Wheal Sperries/Wheal Jane lodes below the deepest workings by diamond drilling, the results of which would be communicated in due course. In August all work was "more or less suspended" pending metallurgical experiments. These continued to be reported in the *Mining Journal Annual Reviews* for 1940 and 1941; in the latter year it was reported that some prospecting had been done at West Wheal Jane. Meanwhile, shortly after the outbreak of war in September 1939, the Non-Ferrous Metallic Ores Committee noted that Mount Wellington was a potential producer of iron pyrite, but that the mine had been turned down owing to the metallurgical difficulties in milling.

A.T.C. Hawkins, then of Tregony, wrote to John H. Trounson on 13th December 1940 to give a summary of operations at the mine. He noted:

As, no doubt you already know, Donald Gill and [H.S.] Dines have been in Cornwall obtaining information for the Non-Ferrous Metallic Ores Committee. They have noted Mount Wellington as a potential producer of Iron Pyrite. The mining man for this Committee is Clifford, who turned down Wellington owing to the metallurgical difficulties in milling. The position at Wellington is as follows:

Main mine above adit level. *The available ore reserves consist of 8,154 tons of ore, averaging 26.9 lbs. Sn (taken to mean black tin, SnO₂) over a stoping width of 6.4 ft.*

Below adit level. *There are, strictly speaking, no ore reserves but at the east end of the strike stoped by the present company 350 ft. east of the main Robinson's shaft there are two winzes down 37 ft. and 47 ft. respectively. Samples taken at the foot of each winze gave 34.25 lbs. and 34.5 lbs. black tin by vaning assay, which would correspond roughly to about 35 lbs. by chemical assay.*

Mining and milling costs. *The lowest working [costs] obtained were in October and November 1937. and amounted to 18s. 4d. per ton milled.*

Nangiles and Wheal Jane above adit level. *The results of the comprehensive sampling campaign carried out over practically the whole length of strike on the ore above deep adit level, nowhere showed payable average values over sufficient lengths to justify the cost of rendering the small quantities of payable ore available to the existing Mount Wellington mill.*

Diamond drilling. *Two diamond drill bore holes, one vertical (No. 1) and the other drilled from the same position but inclined 15° from the vertical (No. 2) were completed last September twelve month in the*

neighbourhood of Beecher's shaft, West Wheal Jane section, approximately half way along the Nangiles-West Wheal Jane-East Wheal Jane strike at a point where the old company's stopes persisted well below adit level and where, therefore, the ore was presumably of good value. The object of the boreholes was to explore the main lode at a depth below any known workings. In the course of boring, two separate lodes were struck, (1) a North lode and (2) the Main or South lode.

North lode. *This lode, which would appear from the existence of small opencast workings to have been worked to a shallow depth only, was encountered in borehole No. 1 at a vertical depth of 191 ft. and in borehole No. 2 at an inclined depth of 175 ft., indicating that the lode dips at 30°. The average value of the lode obtained by chemical assay of the core samples was 46.7 lb. SnO₂ over a true width of 6.9 ft. It should, however, be stated that this average value contains a possible erratic high value of 131 lbs. SnO₂ over a true width of 1.4 ft. In view of the fact that this lode was found intact at two points 50 ft. apart, measured down the dip, it may have been an indication that the lode was virgin at these depths. A cross-cut has now been driven north from Beecher's shaft and the lode intersected 174 ft. in. The lode has been driven on east and west. The lode where intersected in the cross-cut was 1ft. 6in. wide. It pinched to 2ft. 6in. in the west drive and 3ft. 6 in. in the east drive. The average value of the samples taken was not more than 7 or 8 lb.*

Main or South lode. *These mineralised zones, each carrying quite unpayable values, were encountered in borehole No. 1 at 335 ft.-351 ft., 610 ft.-661 ft. and 782 ft.-814 ft. The hole was stopped at 873 ft. No elvan, which usually constitutes the hanging wall of the main lode, was found below 293 ft. and it would appear probable that the lode has split shortly after leaving the elvan which at the surface is seen in its normal position. In borehole No. 2 the lode, or its upper branch, was struck at 475 ft., its average value being 32.2 lb. SnO₂ over a true width of 9 ft. The hole continued to 522 ft. without encountering further mineralisation. The point at which the lode was struck in borehole No. 2 is approximately 50 ft., measured down the dip, below the lowest old workings in this section.*

Hawkins then summarised the working results, and noted that higher vaning concentrates had been obtained from samples taken below adit than those obtained above. A bulk sample taken from the ore recently hoisted at Beecher's shaft assayed 5.69 lb., though the vaning concentrates from all the samples from that shaft assayed 40.65% SnO₂. A sample taken from stones from the Wheal Andrew shaft dump, thought to have come from the Wellington lode at the 80 fm. level, vanned 291 lb. of concentrate assaying 67.97% Sn. These samples indicated that a higher milling recovery might be expected. Elsewhere, it had been proved by pumping tests at Wheal Andrew shaft that neither the United nor the Consolidated mines' water were connected to the Wellington-Nangiles area. The old United mine plan showed that the Wellington lode was intersected from the Wheal Andrew shaft by a south cross-cut at the 80 fm. level and was driven on west for 80 fms. There was no record of any stoping having been done at this point.

Robinson shaft was 40 feet below adit level and reached the back of the lode. Hawkins suggested that the shaft be sunk to 100 feet below adit, that a cross-cut be driven to the footwall of the lode and that the lode be driven on at least 400 feet east as far as the two winzes mentioned. If this work proved satisfactory, a further 400 feet could be driven east as far as the Wellington boundary and for 280 feet west, making 80,000 tons of ore available, assuming a stoping width of 8 feet.

Despite these optimistic notes a resolution placing the company in members's voluntary liquidation was passed in May 1941, the secretary V.G. Hassell Medley acting as liquidator. The Stock Exchange quotations for the shares and option certificates to bearer were suspended at the end of January 1942, but the final meeting return was not registered until November 1948.

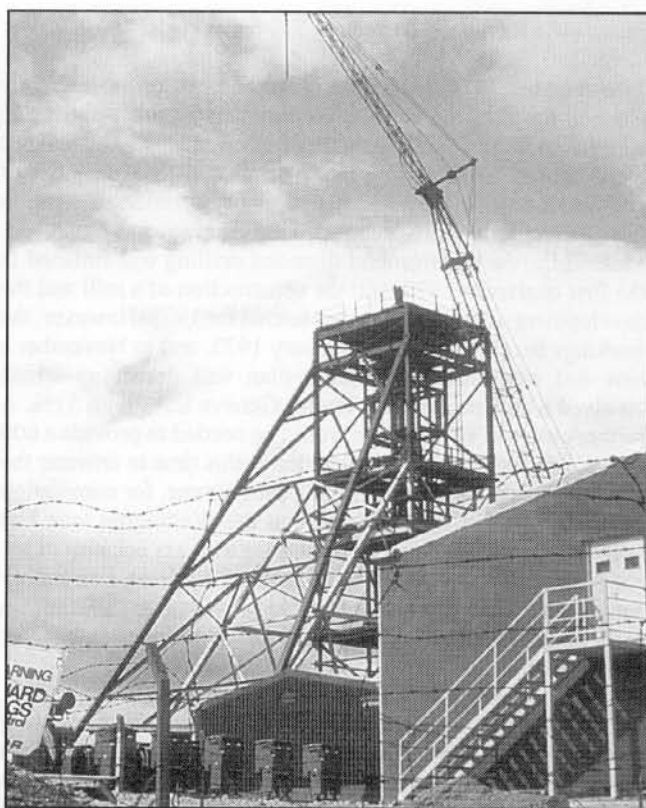
Holder of the convertible bonds received a total of £6.5s. per £25 bond. The 1,280,000 shares under option at par until 30th June 1940 and the 250,000 shares under option to debenture holders until 31st December 1941 were not taken up.

The intermittent working of the mill prevented any comparable annual output figures from being produced. The total of published sales of black tin in August-September 1936, December 1936-January 1937, and September 1937-1st April 1938 was 150 tons 12½ cwt., the average extraction rate in September 1937-April 1938 being only 44.3%, while in December 1936 and January 1937 the recovery rate was only 21.87 lb. and 20 lb. of black tin per ton of ore respectively. It is a matter for some wonder that no attempt was made to calcine the ore as part of the dressing process, in accordance with the methods employed since the 1680s and used at South Crofty mine until the early 1960s.

THE 1960s AND 1970s

The next company to take an interest in the mine was Prado Explorations Ltd., one of the millionaire American J.H. Hirshhorn's group of exploration companies, which was a subsidiary of International Mine Services Ltd. of Toronto. It acquired the mine towards the end of 1967 and erected its first drilling rig in "the Carnon Valley of East Cusgarne". Drilling at Mount Wellington revealed that the lode dipped at an angle of 40°, later stated to be 30°. The company's shares were then "prominent at around \$2.30" on the Toronto unlisted market. The manager was Brian Hester, ARSM., a 39-year-old Canadian geologist, who supervised the explorations over 5½ square miles. In the first five months £100,000 was spent on exploration but, although the Gwennap results were good, work was suspended because a key part of the ground lay outside the present development area, which led to a cut in grants available from 45% to 25%. The company nevertheless hoped that a report by Peter Tress, manager and later a director of Wheal Jane (then a subsidiary of Consolidated Gold Fields Ltd.) would change government thinking. Drilling in Mount Wellington was completed in March and in June the results were considered to be of sufficient merit to justify underground exploration and opening the mine was estimated at this time to cost £2 million. A public company, Cornwall Tin and Mining Corporation, was registered in Delaware (a state of the U.S.A. whose company laws were considered in London to be soft) in 1969, and Prado's interests were transferred to it. Jim Delaney, who for two years had represented the various concerns on the Cornish Chamber of Mines, in succession to E.C. Knuckey, ACSM., MIMM., resigned from the Council of the Chamber in 1970. Excomm Ltd., a Bermuda company with strong Swiss backing, and Prado, each held 5½% of the capital of the Cornwall corporation. Prado received 900,000 shares or 45% of the issued capital of the Cornwall Corporation in exchange for its interest in Mount Wellington.

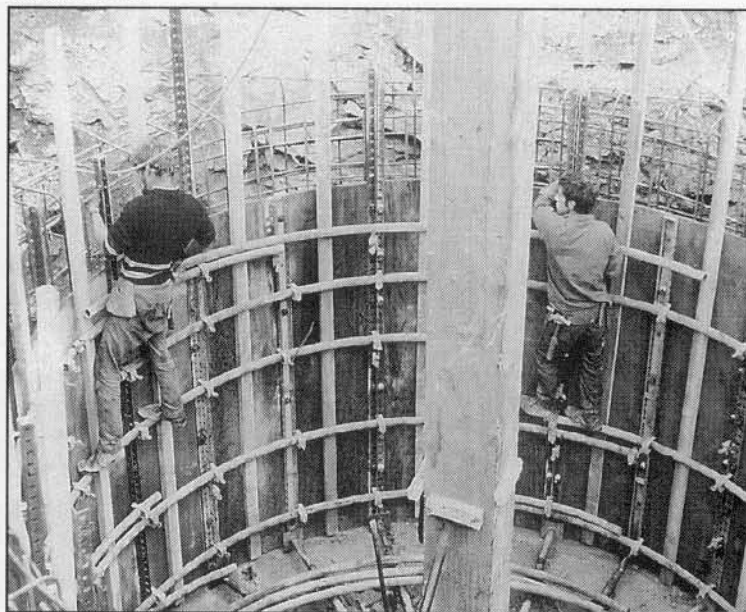
Whilst the Cornwall Corporation continued diamond drilling at surface preparations were made to sink a new 15 feet diameter shaft, whose collar was poured in November 1969. Sinking began a couple of weeks later. It was intended to go down 603 feet and to drive at the 550 feet level, and it was expected that it would take about five months to complete the shaft and 3000 feet of levels. The first bulk samples from a depth of 300 feet were sent to the Warren Spring Laboratory for analysis in April 1970 when it was stated that the mine was pumping 40 (sic) gallons a minute (*West Briton*, 9th April 1970). The new shaft reached a depth of 400



Headstocks under construction, April 1978.

feet early in June 1970 and was expected to be completed in July, when it was proposed to drive cross-cuts to the lodes at 500 feet and 600 feet. The minimum economic prospect was half a million tons of 0.91% tin (20.38 lb. of black tin to the ton) with a 60% recovery rate. If all went well, next February £2½ million would be spent on erecting a mill, the exploration stage having cost £600,000. Explorations during the year included eleven boreholes totalling 8,515 feet, making a grand total of 66 holes totalling 43,847 feet since the start in 1967. Surface drilling ended in July, and in October the shaft reached a depth of 198 metres (649.6 feet). Five levels were established, at 49 metres (216½ feet) below the shaft collar and thereafter at 33 metre (108.35 feet) lifts. The pumping capacity was 5 million gallons daily (3,472¼ gallons a minute) in August 1971. Cross-cutting and development on the lode was planned at the 148

Assembling the shuttering prior to pouring the collar on New Shaft, in Autumn 1969.



metre (486 feet) and 181 metre (594 feet) levels.

In November 1971 the company applied to Cornwall County Council for planning permission to develop a mine on its 525 acre site at Mount Wellington. Permission was granted in April 1972 subject to providing more detail and to a long list of conditions covering environmental and restoration matters. In this connection a Truro architect, Paul Bunyan, was employed. Meanwhile, the underground diamond drilling was finished in the first quarter of 1972, and the construction of a mill and the development of production was planned for 1973. However, the workings became flooded in January 1973, and in November a new and complicated financing plan was drawn up which involved a new participant, Trades Geneva S.A., with 51%. A further outlay of £2½ million would be needed to provide a 600 tons per day mill, and it was decided at this time to unwater the mine and to start another sampling programme, for completion in March 1974. It was reported that the Wellington lode had been left virtually untouched by former workers because of the complexity of its minerals, but the Warren Spring Laboratory had devised ways to dress the ore to provide two different tin concentrates and a by-product of a copper-zinc-silver concentrate.

The unwatering, inspection and re-sampling of the mine were completed in March 1974, financial arrangements were then made, and a 19-month construction and development programme started in June. The whole project was then "restructured" to operate as Cornwall Tin and Mining Ltd., a U.K. company in which Cornwall Tin and Mining Corporation of the U.S.A. retained 49% and Excomm Ltd. of Geneva 51%. Cornwall Tin and Mining Ltd. was registered in June 1974, with Jim F. Delaney, BSc., PE. continuing as manager until the mine's closure four years later. It was reported that government assistance had been given in raising the £4¼ million needed, and that a bank, the mine's controllers and the shareholders had all put in cash. It was then expected that the mine would have a life of twenty-five years. The development programme on which work was started on 1st June included deepening the shaft from 650 feet to 975 feet, to accommodate seven levels, and it was planned to raise 850 tons of ore a day for five days a week to support the mill running on 700 (sic) tons per day basis for a seven-day working week. Half the ore was to come from open stopes on the flat-lying 35° lode and the balance by shrinkage stoping from the steeper-lying lodes. At the end of the year 64 people were employed.

Mount Wellington in full operation, Autumn 1978.



The company advertised for a mechanical foreman, a mine captain and three production shift bosses in May 1975 and for a surveyor in September. In November planning permission for an additional 22 acres of the mine, to be used for mine waste disposal, was granted subject to restoration and landscaping. At the end of the year 203 people were employed, the buildings were completed, and the equipment installed, ready for the start-up in February or March 1976. In that month seventy underground workers returned to work after a 36-hour stoppage, their third in six months. They were evidently dissatisfied with the terms of the bonus incentive contracts offered by the management. In the first and second weeks of July, a hundred underground workers, or about half the underground work force, came out on unofficial strike, which started when a ventilator fan broke down, in protest over the working conditions and bonus system. The men claimed that they were "not being allowed to work their full contract periods, which has the effect of reducing earnings." Jim Delaney, however, told the *West Briton* newspaper that all the men wanted was £100 per week guaranteed income for leading miners, but John Nicholson, the Transport and General Workers' Union organiser, stated that the problem was job allocation. In October the company obtained planning permission to build two explosives' stores and associated protective earthworks. In November a fault developed in the hoisting mechanism, when the cage slipped nine feet and could not be rectified before the men came on night shift, so they were sent home. The fault was put right in time for a small midnight shift to go down. At this time the mine had insufficient skilled men and was troubled by the 5,000 gallons a minute of water percolating into it in the three winter months. Of the 240 employed, 40 were at surface and the mill was working on 4,200 tonnes (4,650 tons) of ore a week. Proven reserves were about a million tonnes (1,106,000 tons) and the mine was thought to have an operating life of 16 to 20 years if the 3 to 4 million tonnes (3,318,150 to 4,424,200 tons) believed to be there were found. In December the company advertised for a metallurgical technician, and at the end of the year 255 people were employed and it was reported that the mill had only worked intermittently during the second half of the year, low recoveries having led to a number of major alterations.

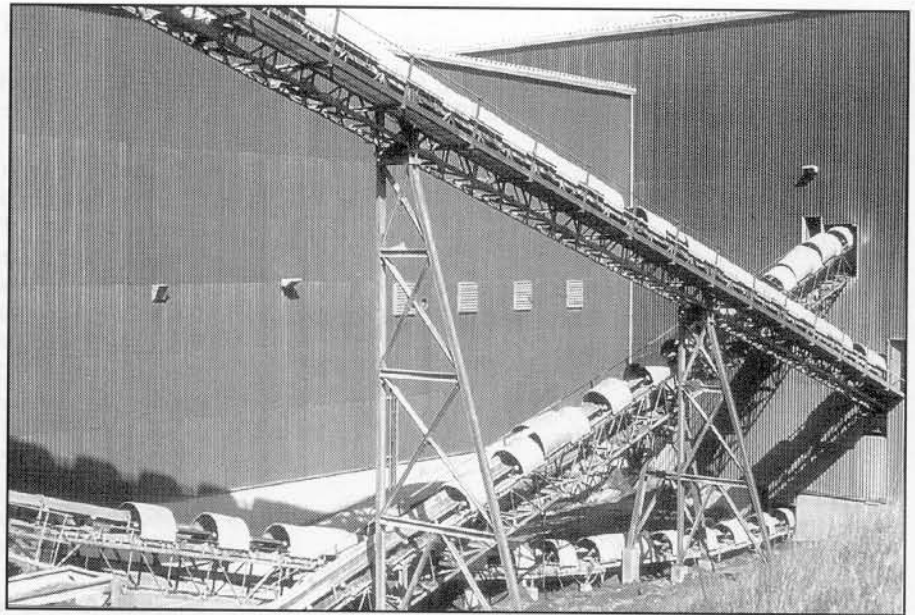
The company advertised for an underground shift boss in February 1977. Later in the year M.T.G. Davies succeeded Jim Delaney as the company's representative on the Cornish Chamber of Mines. In August it was reported that the company had found the ore "highly abrasive and sticky" and had installed Jaybee torsion arm conveyor belt scrapers, made by Jobel Engineering of Hexas Water, near St. Austell. At the end of the year 298 people were employed and it was noted that during the year about 1,500 million gallons of water had been pumped from the mine. It was also noted that the water level in the neighbouring United Mines had been lowered by 140 metres (460 feet) to approximately that of the lowest working levels in Mount Wellington. In the mill G.E.C. spiral classifiers, ten additional sand tables and a tin flotation circuit were added. The mill was unusual in that the shaking tables were arranged in fives, one above the other, in accordance with the patent of Charles A. Stetefeldt of New York (*Mining Journal* 1864 p. 633), whose tables had a rotary

motion. It is thought that the Mount Wellington practice was the first of its kind in Cornwall.

In January 1978 the company obtained planning permission to test drill for minerals in the Point Mills and Crofthandy areas. In February it was announced that ore grades had been lower than the 1.2% (26.38 lb. of black tin to the ton] that had been expected. The break-even price for tin was between £6,300 and £6,400 per ton, against £2,000 when the mine started. In April planning permission to drill for one year at United Downs, Carharrack, was obtained, subject to completion and restoration of the land by the end of March 1979. In April 1978 David Penhaligon, M.P. for Truro, was told in reply to a parliamentary question that in 1975-76 the company had received £800,000 for a debenture loan and regional development grants of £632,636. In 1976-77 regional development grants were £292,638, and in 1977-78, £89,132. Bob Cryer, the Under-Secretary, added that the company had five directors, three in Switzerland and one each in New York and Toronto. At this time 32% of the capital was held by Mr Hirshhorn and 68% by Excomm, and it was hoped that the mine would be in full production by the middle of the year. Later in April 1978 it was reported that a meeting was to be held in Geneva to discuss the future of the mine which, in the twelve months to the previous September had lost over £2¼ million. The meeting resolved to close the mine, with a loss of 325 jobs, and this took place on 21st April. Peter Tress, of Wheal Jane, said his company had been offered Mount Wellington at a price "we could not possibly expect to pay".

After the mine had closed much of its paper was thrown into a skip for disposal. An examination of the skip's contents revealed that the company had not exercised economy in its management. Expatriate salaries were paid, and everything was put on to a computer, even ephemeral notes showing that an intelligent person with a notebook and pencil could have shown the same results as the electronic ones. During the year the mine acted as a pumping station and as a means of emergency access to Wheal Jane, as the adits of the two mines were almost at the same level at their tails in the Carnon Valley. The Wheal Jane management found that the Mount Wellington adit had been driven on a fault, and that about half the water pumped from the latter mine into its adit trickled back underground. A concrete bottom was put in, which solved the problem.

The future of Mount Wellington mine was undecided at the end of 1978, but early in 1979 Billiton Minerals (U.K.) Ltd., a wholly-owned subsidiary of the Royal Dutch/Shell group, took over the plant and equipment of Hydraulic Tin Ltd. at Bissoe, just down the valley from the mine. Between 1979 and mid-1980 Billiton bought the Mount Wellington dressing plant and other surface facilities, but not the mine, and prepared to treat tailings in the Carnon Valley, described as being "thixotropic material". The Mount Wellington mill and the Bissoe operation were halted in May 1981, with the loss of 180 jobs, due to the low tin price. About 180 tons of tin metal in concentrates had been produced by the two plants in 1980; part of this may have come from the South Crofty dumps, which had been brought in lorries at week-ends to the mill.



The modern mill.

In January 1982 Billiton decided that it would not be possible to work the deposits in Restronguet Creek (the seaward extension of the Carnon River valley), as some of the mineral rights had been transferred by the Duchy to tidal owners. In August it was announced that agreement had been reached in principle, whereby Carnon Consolidated Tin Mines Ltd., a subsidiary of Rio Tinto-Zinc Bristol Ltd., would acquire from Billiton the plants at Mount Wellington and Bissoe. Billiton gave the following output figures, evidently for black tin:

1979	83 tons gravity concentrate	33½ tons flotation
1980	48 tons (Mount Wellington)	
	148 tons (gravity and flotation, Bissoe)	

For a while the Cornish Chamber of Mines rented an office at Mount Wellington, and some time after the mine's closure there was a break-in and the Chamber's membership records from its start in 1917 were stolen. They appeared on the market fifteen years later, and the older section was bought and returned to the Chamber by one of the people who had assisted in its resuscitation in 1969 after many years in limbo.

A period of silence followed, which was broken in April 2000 by the *Western Morning News*, the Plymouth daily paper, with a headline "30-year-old bungle undermines inquiry". The bungle, made in 1972, had forced Cornwall County Council to pull out of a public showdown with David Shrigley over an alleged breach of planning conditions affecting the restoration and clearance of the Mount Wellington mine site. Formerly a Mount Wellington miner, Mr Shrigley, who had bought the site, appealed against an enforcement notice served on him by the County Council. He claimed that it was too late for the Council to issue a notice because over ten years had elapsed since the mine closed. The dispute was to have been dealt with at a public inquiry, but the arrangements were cancelled when it was found that the condition relating to the clearance of existing buildings was not included in the permission issued in 1972. Mr Shrigley wanted to use the site for a waste disposal plant, to which residents in the area had objected.

ACKNOWLEDGEMENTS

To Cornwall Record Office for permission to reproduce the photograph of Mount Wellington in the 1930s.

Note: See rear cover for colour photographs of the Mount Wellington headstocks and the associated Wheal Maid valley tailings dam as they remain today.

Justin Brooke.

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