

# THE TREVITHICK SOCIETY

NEWSLETTER No. 44

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## Last engine houses on Consols under threat



The two enginehouses at Consols Mine, Gwennap, as they were in 1961: Davey's 80 (left), Taylor's 85 (right).

Last month we learnt of a threat from Carnon Consolidated, who operate Wheal Jane, to demolish one, and perhaps both, of the two famous pumping enginehouses surviving on Consolidated Mines, Gwennap.

Council members who visited the site were disturbed to find that the ruin of Davey's 80 inch have recently had a roadway driven through and only a part-buried portion of the bob wall remains. That of Taylor's 85 inch (not to be confused with its more famous namesake on United Mines) has not been disturbed: the bob wall and one wing wall are still complete but the brickwork at the top of the stack is precarious.

Carnon have plans for development westwards which will involve reopening Davey's and probably Taylor's shafts. It is understood that the Mining Inspectorate will insist on demolition of the structures for safety reasons (as happened a few years ago with Nangiles 80). This is despite the commonplace use elsewhere in Britain of shoring, grouting and anchoring techniques for stabilising historic structures.

Council spent some time discussing the issue. Action will include an updating of the list of enginehouses recommended for preservation, and approaches to various bodies including possibly the Inspectorate regarding Carnon's proposals. The historic clock tower structure at Consols is not under threat but uncertainty exists over the remains of Taylor's and Davey's whims which also survive.

Davey's 80 was set to work about 1833 and was designed by Samuel Hocking, a former pupil of Woolf's, with strokes of 11ft 4in and 8ft 9in. It was a high-duty engine, maintaining 72-74 millions consistently for a number of years. Still visible is evidence of an angled eduction pipe arising from having an offset exhaust valve and two air pumps. The engine was illustrated in Charles Combes' *Annales des Mines* (published 1834) and was mentioned by Dr Pole in "The Cornish Engine" published in 1844.

Taylor's house is thought to be one of the oldest in Cornwall. The first engine on this shaft was a 70-inch which went to work in 1826, being recylindred to 85-inch in 1833.

### Camborne's Trevithick Day, 28 April

In addition to the lecture the previous evening (see programme card), the Society is having a display and sales stand at the Berkeley Centre (beneath the town clock) in charge of Mr Edmonds. it will be open from 10 till 4.

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## Editorial

In this issue of the Newsletter we carry (back page) the 1984 meetings and visits programme of the newly-formed East Cornwall branch. Events run by the branch are, of course, open to all members and visitors, and the dates have been carefully chosen to avoid clashes with other Society events.

With this newsletter all members should receive a Programme Card listing the Society's main events in 1984-5. No further reminder of events up to the end of May are given in this newsletter except that details of the film show on 17 May and Bristol visit on 19 May (with booking slip for the latter) are given on the back page. Mr Hodge's lecture on Richard Trevithick on 27 April is our contribution to the Camborne 'Trevithick Day' being organised by the local traders' association on 28 April.

It will be the policy of the newsletter to report each and every event, and this will inevitably mean a reduction in space available for feature articles. Since the main function of the newsletter is to inform members as to what is going on and keep members in touch with one another, this is not seen as a serious drawback. However, Council has appointed a subcommittee to study the total objectives of the Society's publications.

The year 1984 is also notable in that it sees an attempt to make an upcountry visit a viable Society operation. I refer of course to the Bristol City Docks visit on Saturday 19 May. John Corin who has organised the trip using a coach from Cornwall describes it as "a marvellous concentration of industrial archaeology packed into four hours". It is most important that members all over the country support this visit because on the response to it the whole future policy of the programme subcommittee depends. With the SS *Great Britain* included in the tour, it should make an enjoyable family outing and not simply an excuse for Dad to go away for the day. Non-members are also welcome as *bona fide* guests of members.

Our Membership Secretary thanks those members who have renewed their correction subscriptions, but reminds others that they are either overdue, or owing the £1 difference between the old and new subs. No newsletters after the May issue will be sent to members who are not fully paid up.

Owing to a visit to Australia and Tasmania I shall not be available for dealing with correspondence or other matters for virtually the whole of March. Copy date for the May newsletter will be Saturday 7 April. Finally, could I ask contributors to please use A4 size paper, write on only one side and leave a margin each side as this makes the task of editing easier.

Kenneth Brown

## Hon Secretary's column

At the time of the last Newsletter I was somewhat preoccupied with reading the files of correspondence and the Minute books so this is my first report and covers the activities of your Council of Management since the AGM. May I take this opportunity of thanking Mary Smyth for handing over the records in such excellent order—I hope that I can maintain her standards.

Council has studied the Camborne-Redruth Draft Plan prepared by Kerrier District Council and submitted a list of 11 sites "at risk" in the Development Plan together with justification for their preservation and a further list of 25 sites which, if not worthy of preservation, at least should not be destroyed. It is your Council's intention to examine the development plans for all areas of Cornwall and parts of Devon, and to this end all members are asked to look at their own areas and to inform Council of any sites they consider to be of historical significance. A brief note in the last Newsletter reported the proposed conversion of Tregurtha Downs enginehouse into a dwelling house. As this is a scheduled ancient monument the Society has written to the Ancient Monuments Administration objecting.

An agreement has been signed with Geevor for the transfer of the Society's possession to the Mining Museum. It is hoped that the move will be completed in time for the Museum's opening this summer. Members will have free access. Council has been brought up to strength by the election of John Robinson, of the Science Museum. Nick Johnson of the Cornwall Committee for Rescue Archaeology has also been co-opted to the Council.

Council has devoted some time to discussion of the future of the Society, particularly ways of promoting interest in industrial archaeology. We would like to see greater involvement of Members in the activities of the Society and greater involvement of the Society with other bodies such as the Association for Industrial Archaeology, local press, radio and TV, and colleges and schools. Your suggestions and proposals are welcomed, but in the meantime Council has been busy. The programme has been widened considerably—there are more meetings, over a wider range of topics and held at a wider range of venues. The work of recording is gaining pace: we are involved with the Cornwall Committee for Rescue Archaeology and making a

worthwhile contribution to the Register of Sites. Priority is given to involvement in planning decisions by local authorities and the Department of the Environment.

Do I hear some members saying that this is another case of *déjà vu*? Quite right, but this time we intend doing more than talking; some members of Council are actively engaged in practical industrial archaeology—surveying, recording, preserving, researching, etc.—and we know that many members are similarly engaged. But we need more involvement with more members. We think that this year's programme will help. Keep in touch!

Bill Newby

## Dolcoath and Cook's Kitchen Tour, 27 December

A dozen members attended this additional visit, led by your editor and Clive Carter, in the aftermath of Christmas.

Starting at Dolcoath New East whim house (SW661404), the party headed westwards via Old Sump Shaft to the base of its beam whim where the crankshaft loading with crank pit and flywheel slot may still be seen. Next call was the boilerhouse of the Dolcoath Avenue cross-compound air compressor, loadings of which were only recently cleared. A tongued stone from the 18th century Woolf boiler was noted in the masonry above the boilerhouse doorway. The houses in Dolcoath Avenue itself were built in concrete in 1908-09 to attract more miners to Dolcoath.

A short walk to Harriet Shaft enabled the party to see the Dolcoath miners' dry, built in 1888, heated by steam from the pumping engine boiler and used today for educational purposes. Copper slag blocks from the 18th century smelter were used in the walls of the building as an architectural feature. Also noted here were the loadings of the upcountry-built horizontal engine installed in 1898 for skip winding, and of course the house of the 60-inch pumping engine and shaft collar.

The course of the 22in gauge Dolcoath tramway was then followed to Stray Park, passing the sites of Man-engine Shaft (now obscured) and Man-engine whim. A few portions of wall parallel to the south side of the railway cutting mark the site of one of the mine's rope walks. Stray Park Engine Shaft itself is not readily accessible but the engine house which was rebuilt in 1900 around a Holman built 65in engine is still in good condition. From photographs it is evident that the new house was grafted on to the old stack. The engine was a replacement for an old 60in and utilised the same beam. An unusual feature is that the engine's cylinder loading is in concrete. The site of the ore bin which was the tramway's terminus is now occupied by a bungalow but the tramway bridge over the main line (SW654400) still survives, though tarmac covered. Due west of the bridge were noted the furze-covered burrows of Camborne Consols.

The party then retraced its steps to the heart of Dolcoath mine, New Sump shaft, noting the recent excavation of the old burrows which has played havoc with ground levels in this area. Foundations of New Sump new whim (ex Wheel Cock) and the stone crushing plant have been partly obscured by heaped up waste material, and of New Sump shaft itself and the 85in pumping engine there is now no visible trace.

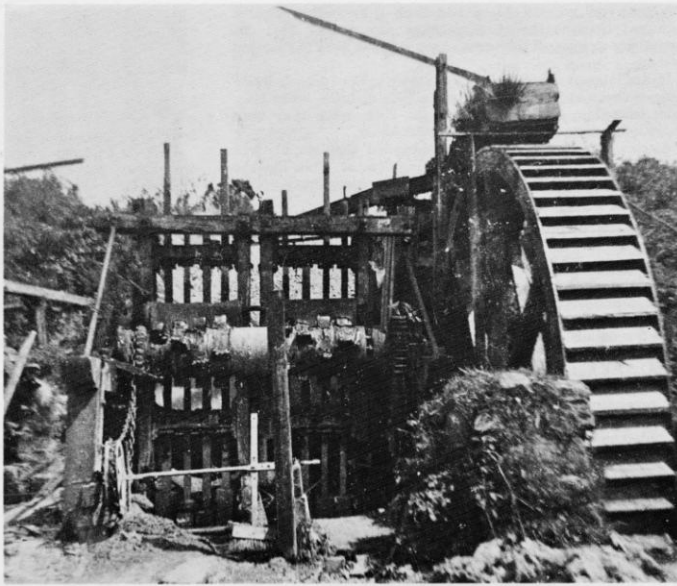
An open shaft at the rear of New East whim reveals that the engine probably drew water by means of a 'back bob' at one time, doubtless to supply the dressing floors which occupied the western slope of the Red River Valley. Of these there is little evidence due to Council tipping and more recent burrow excavation, but the bases of calciners and the remains of an early stamps engine house may still be seen. Of the numerous wheel-pits which once adorned both sides of the valley the remains of only one can now be identified with any certainty.

On the east side of the Red River a few walls mark the site of a hoist which photographs taken at the turn of the century show in use drawing from Eastern (or Valley) Shaft high above on the eastern slope. Possibly the site was earlier occupied by the old smithy where parts of Richard Trevithick's 1801 locomotive were made (SW664405), but one cannot be too specific. Ascending the slope the party inspected Valley Shaft, still maintained by South Crofty for access and hence untipped on. A little to the north are foundations of the Californian stamps battery, its horizontal Harvey mill engine and a small Holman engine which drew dressing water from an adit shaft.

The tour was rounded off by inspection of the 55 inch pumping engine house on Chapple's Shaft of Old Cook's Kitchen mine and the 26 inch whim house, the north wing wall of which has recently collapsed. Close by is the massive loading for the Harvey-built 26 inch horizontal man-engine installed in 1871 and connected with Man-engine shaft by flat-rods which crossed the railway. The shaft is close to the south-west corner of the more recent railway bridge but traces of the masonry angle-bob pit on the north-east edge of the shaft are fast disappearing under rubbish. Man-engine shaft is 420fm deep (SW666405).

## Tin stamps in the Nancledra and Trevarrack Valleys

By Dicon Nance



Menner stamps described in this article (photograph by A.J. Saundry)

“Wheal Mally, Wheal Boggy, Bostritha, we hear,  
Five stampses in Treva, and two in Polpeor  
There’s Nance stamps and Trink stamps, Lappurian they say  
There’s Menna stamps and Bowl stamps  
They’ll gain the day.”

per Mr. Nathaniel James, Trencrom, Lelant, 22 July 1927—given the author by the late Dr. Hamilton Jenkin.

This article describes the rural stamps in the two valleys nearest my home, but they were typical of any of the valleys in the mining districts, where stamps were worked wherever water could be got to them.

In this period, about 1920-30 all the stamps were engaged in treating tin-stuff from the burrows, and it speaks well for the knowledge and tenacity of the tinner that they could hang on so long after mining ceased in this area. It is true that occasionally some of the old mines were worked above adit. Trevarrack worked Wheal Strawberry at one time, and Locke part of Wheal Sisters near Polpeor, but these were exceptions rather than the rule and the burrows remained the principal source of supply.

There was considerable variety amongst the stamps in the two valleys, in fact no two sets were the same. There were examples of direct drive and geared drive, iron and wooden lifters, sets of three and sets of four, with four, five and even six cams per revolution. But they all had two things in common, they were all ‘flesh’ stamps, i.e. they dispensed with grates and maintained a fairly constant size of stampings by means of water flow, and they all had bottoms or ‘beaters’. One of Mr Berryman’s earliest memories at Locke was being sent with the cart to Penzance to pick up a new beater, and his surprise at the weight.

These beaters were cast iron blocks fitting between the frames an inch or two wider than the stamp-heads front to back, and from six to eight inches thick. They were the ‘anvils’ on which the stamp-heads crushed the ore and being of cast iron they were particularly vulnerable should the stamps be allowed to run short of tin-stuff. Such an occurrence might very easily result in a broken beater. There were two devices to prevent this happening:

- The feed was kept constant by means of the ‘butty post’,
- The whole stamps was automatically stopped if the supply of tin-stuff ran out.

To describe the butty-post and its action it is perhaps simplest to follow the whole method whereby tin-stuff was fed to the stamps. There was a large, granite-paved plat above and behind the stamps, variously placed according to the situation, but mostly some ten or twelve feet above. Here the tin-stuff was dumped from the carts.

On the stamps side and sloping sharply down towards them

was what was known as the ‘pass’. At the lower end of this pass was a stout wooden barrier with square openings about two feet wide and one foot high, one opening to each set of stamps. The top end of a tapering wooden chute, called a feeder, fitted into this opening, whilst the lower and narrower end extended as near as possible to the stamp heads and was supported on one or two horizontally laid saplings (see sketch on page 5).

A too sudden rush was prevented by a bunch of old chains hung in the feeder and resting on the descending ore. A constant and controllable flow of water was fed into the feeders from a launder running across the barrier. The projection on the lifter that struck the butty-post was usually an old worn tongue placed in reverse on stamps with iron lifters; where they were wood, it was probably the tail of a tongue.

The second safety device was on the flushet of the water-wheel itself. The flushet connected to a weighted cantilever and fell open when released. A second cantilever was connected to the weighted end of the first at one end, and at the other by a length of wire or chain to the centre of a yoke. From either end of this yoke, two bars of wood were suspended on wire.

These bars were cut to fit between the stamps frames and, when the water-wheel was working, were held in a horizontal position by being hooked under cleats fitted to the inside of the frames: one bar to each set of stamps. A projection on the feeder stamp lifter was so placed that when the stamp dropped too low the bar was dislodged from its cleats, allowing the flushet to fall open and so stop the stamps.

With this equipment the stamps could be left unmanned for hours, allowing the men to attend either to tin-dressing or the carting of tin-stuff from the burrows. It also allowed the stamps to be left working into the night. The merry clatter of Trink and Bowl Rock stamps made music in the valley well after dark, whilst Trevarrack with its wooden lifters made a dull thud that was only audible from certain places, and dominated only when you were close.

Stamps were naturally designed to crush as much ore in a given time as was practicable, hence the variation in the number of cams per revolution to suit the speed of the cam axle. The slower direct drive axles had five or six cams compared with four on the faster gear-driven axles. The stamps speed varied considerably according to the supply of water or whether the cams had been recently greased, but 70 to 72 blows per minute was considered as optimum. The old men used to say 60 per minute, and this is true of ‘flesh’ stamps. These work much better if time is allowed for the flesh and the motion not too violent.

The lubricant used at this time was called gudgeon-grease, ordinary cart-grease, an oil thickened with lamp-black and consequently black in colour. As most stamps were either exposed to the weather or inadequately protected, it was difficult to keep

the cams well greased. Many had flaps of greased sack-cloth arranged to wipe the cams as they cam round. This did something to wipe off the worst of the rain and keep the surface greasy.

It is of interest to note that stamps seem to have progressively done without shelter from the early 19th century, when they were housed in stone houses, till the 20th, when they were sometimes erected with no shelter whatsoever.

At this time none of these stamps 'burned' their tin, nor was there any evidence of their ever having done so. This, like the smelting, was done by others with suitable equipment.

Working in order down the valley:

### Nancledra Valley

#### CHYPONS

This was a small stamps of four heads with iron lifters and direct drive. Much of the dressing plant was housed in a linhay supported on granite pillars. It was scrapped quite early and I have few details of it.

#### AMALYBRA

Two sets of four heads, iron lifters and direct drive, four cams per revolution. Each set had a separate cam axle, simple cast cylinders with no flanges, 36in long and 18in diameter, both mounted on a 4½in square iron axle. There was an extra bearing between the cam axles. The water-wheel was 13ft diameter and had seven spokes. It had a cast iron axle 15in diameter. There were buddles but I think no round frame.

#### LITTLE STAMPS

In its layout, this would appear to be the oldest. The stamps were housed at one end of a small building 14ft by 10ft, at the other end of which was a fireplace with a door in the side wall. Four heads with iron lifters, five cams per revolution, direct drive.

When taken over by Nathaniel James in about 1910, the axle was of oak in one with that of the waterwheel, working four heads with wooden lifters. The cams were of cast iron, penetrating the oak for about 9 or 10 inches and wedged with wood and iron in the usual way. Shortly after 1910 the axle split right down the middle, and a cast iron replacement was made. This axle was 36 inches long and 24 inches in diameter and had five cams per revolution. The water-wheel was about 12ft diameter and 30 inch breast.

In the wall between the wheel and the stamps there were two stones about 14 by 8 inches standing out about 8 inches from the inside wall face. The underside of one was about 2ft above and vertically over the axle-hole, and the other at the same height about 3ft 6in to the stamps side. These are quite usual in the older stamps buildings and probably served to anchor the original stamps frame in some way.

#### LOCKE (now moved to Geevor Mining Museum)

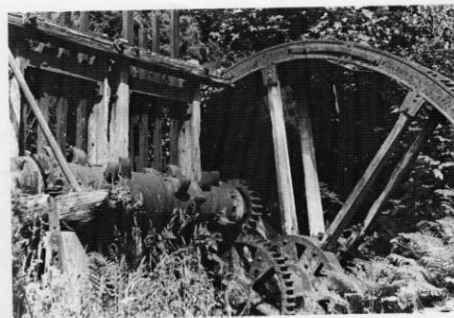
This is a very typical latter day unit with eight heads in two sets, gear driven 2:1 ratio and an 18ft by 2ft 9in waterwheel by E.T. Sara of Camborne. The buddles and round frame were driven by separate water-wheels, 6ft diameter by 12in breast and the other 6ft diameter and 10in breast, both by Bawden of Illogan. A ratchet cast in the cam axle to prevent accidental reversal of rotation shows it to have been made as a water-wheel unit and not, as was so often the case, a water-driven stamps built up on a secondhand axle from a fire stamps, when some improvisation had to be devised for this purpose. The round-frame here as at Trevarrack was unusual in design and was said to be of German origin. It was like a Cornish round-frame in reverse. The circular, concave, revolving wooden table was replaced by a fixed, convex masonry one, whilst the launders themselves revolved. The principle otherwise was exactly the same.

#### BARKLES

The upper unit consisted of twin sets of three heads, with iron lifters and direct drive. The two bearings for the 12ft waterwheel and cam axle were supported on stone walls. This stamps was worked in conjunction with Lower Barkles, opposite Ashton, where most of the dressing plant was situated. Another stamps probably of six or eight heads was working at Lower Barkles at the same time, but I have no details of this. Only the ruined walls now remain.

#### CUCURRIAN MILL

This was a small set of four heads, direct drive and probably iron lifters. It was unusual in that it was housed in a building that was also a mill and at the other end a dwelling house. The water could be directed to work either of two wheels and so work the mill or the stamps. Both these stamps and those at Cucurrian



Locke stamps on their original site

Bottoms were probably working at this time but I never knew them nor have I any details.

There is the remains of a linhay with granite posts at the latter. This seems to have been a usual method of housing the dressing plant at stamps in this area. I am aware of no remains of floors at Cucurrian Mill. Whether there were any or whether stampings were washed elsewhere, I have no knowledge. There were other stamps in this valley further down, but they were outside the district.

### Trevarrack Valley

#### TRINK

There were other stamps further up the valley, at Nance & Westaway the sites of which were clearly traceable, but this was the first working one in my memory. There were eight heads here, gear driven by a very large waterwheel with narrow breast and shallow shrouds. According to Mr. James who worked it with Lapurrian, it was originally put in to treat slimes from Trencom Mine and the cams "were all higgledy-piggledy." (sic).

This I only learned long after it was broken up and I have no record of how they were arranged.

The stampings from here were conducted down a long launder to Lapurrian. Trink stamps had a large reservoir or mill-pool upstream near Nance but despite this it was apt to be short of water in the summer.

#### LAPURRIAN

Mr. James told me that these stamps were put in by a Capt. Dick Perry in 1861. When I knew them they were the only example of wooden lifters in the neighbourhood. The axle was one casting with a journal at each end. The latter were housed in round tapered holes and secured with cotters. The cam axle was a separate casting that fitted over the main axle and was secured with wooden wedges in the same manner as were the two waterwheel hubs. There were six cams per revolution.

The cotter securing the journal on the stamps end was allowed to stand out 4-6 inches either side and was used as a pair of cams for packing kieves. The motion was conveyed by a series of wires and bell-cranks to the nearby dressing floors. Except for the cast iron hubs, the waterwheel was built entirely of pitch-pine, which timber was also used for the 6in square lifters. Originally, the spills securing the heads to the lifters were ragged up and cast into the heads, but later they were dovetailed into the heads in the usual manner so that standard heads could be used.

The following method was used to fit the heads to the lifters. A groove (droak) was cut in the end of the lifter, from one side to the centre, following closely the taper of the spill to be fitted only allowing the head to stand off about an inch at the bottom and extending a similar distance beyond the tapered end. When the spill was in place, a piece of wood was cut to fill the groove, and the whole bound with two or more square bands. A similar band was driven on the other end of the lifter.

Four men then slung the head and lifter in two rope slings in the manner of a battering-ram and running the top end of the lifter against a large stone, drove home the spill into its final position. The above method was in common use to fit iron gudgeons to timber axles and was probably only superseded by the wing gudgeon, when the axle was taking a drive through the gudgeon. The diameter of the cam-axle was 2ft 6in, the tongues being placed 1½in above the axle centre with the head resting on the beater.

There were six heads arranged in sets of three. The order of



lift was 1.2.3, both sets together. Nos 1 and 3 were heavy heads, No 2 was light. The feeder went into the 1st and 2nd heads. No 3 was the flosher. The butty-post was struck by the tail of the tongue of No 3. The tongues differed from all those I have seen on other wooden lifters i.e. those at Lanivet, Gracca and Polgooth, in that they were forged up in wrought iron faced with steel, in the manner of the Cornish shovel. They had a square spill that drove right through the lifter, and was secured by a forelock backed by a large square washer.

It is interesting to note that this is precisely the same method as that shown by Agricola three hundred years earlier, except that he shows the forelock horizontal. At Trevarrack it was vertical. There were two large bevel gears on the waterwheel end of the axle. These drove the buddles, a system that Mr. James deprecated as it made speed control of buddles impossible. The single round frame here was similar to that at Locke. It was worked by a separate small waterwheel which also picked up the initial feed with a bucket wheel.

**BOWL STAMPS**

These stood by the roadside just below Bowl Rock. They had two sets of four heads with iron lifters and gear drive. They were a typical small waterwheel unit of the latter half of the last century. There are the remains of a large linhay with dressing floors. These stamps were scrapped in the late 1920's and no details were taken.

**MENNER STAMPS**

These were two sets of four with iron lifters, though considerably more powerful than those at Bowl. They were driven by a large high-breast wheel. These were the last in the valley and were scrapped about the same time as those at Bowl. I have no clear memory of them, but there were dressing floors with several buddles and I believe a round-frame. There was a cast iron spiral stairway leading up to the flushet which appealed to us as boys. We were told that this came from an enginehouse.

These notes were prompted by an interest in an age-old but fast-dying industry and would not have been possible without the generous participation of those men engaged and brought up in it. It would be impossible to name all those who have helped, but in particular I would like to thank the late Mr. James Sexton of Lelant who, together with his brothers and father before him, worked many stamps at different times in the neighbourhood, and the late Mr Andrew Berryman of Nancledra who delighted to share a lifetime of his experience in this trade.

**GLOSSARY**

**BEATER** A slab of cast iron 6" or 8" thick, slightly wider than the stamp-heads front to back and extending the full width between the frames.

**BRACE** The cast iron which held the saddles through which the lifters rose and fell.

**BUDDLE** Circular concave or convex masonry tables, over which crushed tin-stuff and water was conducted. Brushes, attached to a revolving frame, swept the depositing sand and prevented runlets of water forming. These graded the ore by gravity and were made in a variety of types to suit the stuff to be treated.

**BUTTY-POST** The post attached to the feeder that was jogged by the lifter and maintained a relatively constant feed to the stamps.

**CAMS** The cast iron tappets that engaged with the tongues and lifted the stamps.

**CAM-AXLE** The cast iron or wood axle that held the cams.

**COVERS (Short 0)** The rectangular spaces in which the stamp-heads worked, formed by the stamps frames protected by side plates and stout wooden shuttering.

**DRAGS** The brushes on a buddle or round frame.

**FEEDER** The short wooden tapering shute, leading from the pass to the stamps. Also the name of the stamp head which besides crushing the ore, fed it under the neighbouring head.

**FLOSH** The opening and short launder through which the crushed ore was washed by the motion of the heads. Small pieces of wood could be dropped across the end of the launder, controlling the flow and thereby the size of material leaving the cover.

**FLOSHER** The stamp-head opposite the flos, the displacement of which sent a wave of water down the flos.

**FLOSH-STAMPS** Stamps that operate by a flos, and not a grate.

**FLUSHET** The trap-door in the main launder that, on being opened let the water bypass the waterwheel.

**FORLOCK** A pin passing through the end of a spill or shaft in the same manner as a split-pin. Used in place of a nut.

**FRAMES** The upright wooden posts that support the stamps.

**LAUNDER LIFTERS** Artificial channel conveying water. The faggoted iron or wooden uprights to which the stampheads were attached.

**PACKING** Method of concentrating the lighter and therefore useless portion of fairly rich tin-stuff by suspending the whole in water in a kieve (large wooden tub) and striking the outside of it with a heavy weight (old stamp head) while it settled. The lighter portion rises as scum.

**PASS** The slope behind the stamps terminating in wooden shuttering down which the tin-stuff was fed to the stamps.

**SADDLES** The channel section cast-iron pieces made in two halves which formed the guides for the lifters.

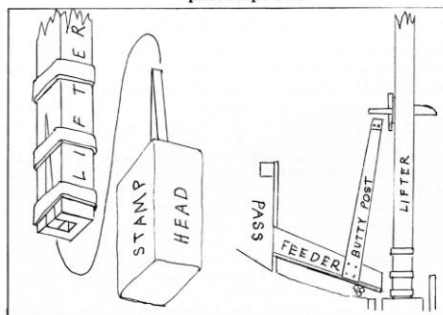
**SHROUDS** The side plates of an overshot waterwheel that constitute the rim, and form the sides of the buckets.

**STAMP-HEAD** The rectangular block of chilled cast-iron or steel that formed the crushing head of the stamp.

**STRIP** Long, narrow trough where the crushed tin-stuff settled initially on leaving the stamps. The lower opening took wooden pieces which could be built up as the trough filled. There were usually three or more of these so that when filled they could be allowed to drain as much as possible, before the sand was removed. The heaviest, and therefore the richest, sands deposited at the top end of the strip and according to the type of tin-stuff being crushed and the judgement of the tinner, more or less of this sand was selected either for re-dressing or throwing away.

**TONGUES** The faggoted wrought iron and steel projections on the lifters that engaged with the cams.

**TOZE** To stir up tin-stuff and water in a kieve using a shovel to ensure complete suspension.



## Correspondence

Dear Editor,

### The Firefly project

David Bick's letter in the November Newsletter correctly reports discrepancies in the proposed Firefly replica scale.

The Trust examined the 'true scale' option early on, but although it was fairly practical for the locomotive, it was impossible for the carriages, and it would have precluded all possibility of working on broad gauge track.

The accepted proposal of 3/4ths scale however, permits the adoption of both 7ft 0 1/4in Broad Gauge and 4ft 8 1/2in Standard Gauge, by means of additional wheel sets. Also, by careful design of the carriages, the original headroom can be achieved.

Early locomotives were designed around a suitable boiler diameter, so that during manufacture a change of gauge could be accepted. For instance the North Star, which was also designed by Daniel Gooch, the designer of the Fire Fly, was originally intended for the 5ft 6in gauge of the New Orleans Railway, and the Great Western 69 Class, having interchangeability of parts with them.

Apart from the full front view, which will be the most distorted aspect, the compromise in scale should be quite acceptable—and it holds the great attraction of permitting actual passenger revenue to be obtained.

Admittedly the result will not be a true replica, but this has been acknowledged by a subtle alteration in the name.

Yours sincerely,

John Mosse

'Applethatch', Foxcote Lane, Foxcote, nr Radstock BA3 5YD.

\* \* \*

Dear Editor,

### 'Small' Cornish engines

Reading in a guide book a reference to small beam engines at Crofton jogged my memory, and in Newsletter No 41 (May '83) I find a similar reference to small Cornish pumping engines at Crofton. No doubt this is the origin of the guide book statement. The point I would like to raise is: What is small? if you spend all your time climbing around the 90 inch at Taylors Shaft East Pool, or the 90 or 100 inch at Kew, then you may infer that the Crofton engines are smaller than those you are used to, but they are certainly not small in the general sense.

Bradford Barton, in *The Cornish Beam Engine*, on page 252 quotes from Thomas Spargo's *Mines of Cornwall: Statistics and Observations 1865* a range of pumping engines from 18 to 90 ins and ranged in three groups.

Less than 40 in  
40 to 60 in  
Over 60 in

We can call these groups small, medium and large. The Crofton engines at 42 in are certainly not small, and to encourage the term can be very misleading to the general public. Rather than belittle the Crofton engines, it should be noted that one of them is the *ONLY* Cornish engine working in steam at full load doing the job it was designed for. The other engine, also working at full load, is a Boulton and Watt engine modified by Harvey & Co.

This leads me to say that Harveys, over a period of six years from 1842 to 1848, supplied new boilers, valves, valve gear and pumps for the Boulton and Watt engine, and a complete Sims engine including plunger pump, in place of the original 36 in Boulton and Watt engine. Some information regarding the work that Harveys did at Crofton has been gleaned from the County Records Office at Truro, but I am sure that more is to be found.

May I, through the Newsletter, ask if any members would be interested in spending some interesting hours in the Records office, trying to locate and decipher the correspondence relating to Crofton from the years 1842 to 1849 inclusive?

Yours sincerely,

Roy Simmons,

'Greensted', Haw Lane, Olveston, Bristol BS12 3EG.

*Editor's Note: Taking the cyl size range of 18 inches to 144 inches and splitting it mathematically into three equal size bands, we get*

$144 - 18 = 48 - 6 = 42$  inches as the interval, giving us:

Small	18 to (42 + 18) or 18 - 60 in
Medium	60 - 102 in
Large	102 - 144 in

*However I would accept that 144 in is freakish, and if we decide instead to make 120 in the upper limit (a Bull engine of this size was built in Scotland) then we get:*

Small	18 - 52 in
Medium	52 - 86 in
Large	86 - 120 in, and we can add, Marks & Spencer style,
Extra large	120 - 144 in.

*It would be interesting to hear other members' views on this.*

## Society greetings cards

Our Publications Secretary reports that there is still a substantial stock of these available despite the Christmas rush. They carry a pen-and-ink sketch of St. Just United on the front as depicted on page 7 of the November newsletter. They have no wording inside so they can be used as Birthday cards, Get Well cards, Party invitation cards or what-have-you. Every one sold helps the Society's finances. They are obtainable from Mr Edmonds at 10 pence each; the following amounts must be added for postage:

For 1 to 5 cards, add 13p; 6-9 cards 18p; 10-15 cards 22p, and 16-20 cards 28p. ORDER NOW.

He adds that the next book in our Occasional Publications series *Michell: A Family of Cornish Engineers* by F. Bice Michell is with the printer—it is a splendid work and it is hoped that an Order Form will be available with the May newsletter.

## Book reviews

### Cornish Land Steam in and around Perran Parish

Dyllansow, Truran by Derek Hattam £3.25

Comparatively little has been written about traction engines in Cornwall, but this book of 92 pp gives a fascinating insight into the varied uses to which they were put in one parish during the eighty years from 1869. Each chapter concerns a different owner, and the whole book gives a rounded picture of the agricultural and industrial activities of this part of Cornwall.

The book has many illustrations and an appendix giving technical details of engines based or regularly worked in Perranzabuloe. If there is one irritant, it is the tedious repetition of names of owners and firms which arises from the very limited area of coverage. The author is a miner who has himself been involved in the restoration of steam traction engines. It is to be hoped that others will follow his example and set to paper the 'traction engine lore' of their area as handed down by those who worked with and observed these fascinating machines. The book incidentally includes a photograph showing one of the Kerr Stuart steam locos from the Dolcoath tramway.

RA and KB

### Branch Line Memories Vol 1 Great Western

Atlantic Publishers by Lewis Reade £1.95

A very well produced volume. The photographs are of a high standard and with few exceptions, previously unpublished. In the description of the Chacewater-Newquay branch there are two errors. The branch line crossed the A30 road at Blackwater over an arch, not a metal overbridge. The victims of the East Wheel Rose mine disaster in 1846 were all recovered and the mine worked for some years after the flooding accident. Altogether an eminently readable book. On the back cover we are told that this is the first of a projected four-part series dealing with rural railways. Surely a must for the railway enthusiast.

LJB

### Cornwall's Central Mines—

The Southern District 1810-1895

Alison Hodge, Newmill, Penzance by T.A. Morrison £15

The appearance of the second, slightly larger volume of Mr Morrison's work on the mines in the Central District confirms the impression gained with the first—an outstanding contribution to the history of mining, and an object lesson in researching and presenting the fruits of documentary study. Some might say it is a pity that his sources do not extend far enough beyond the pages of *Mining Journal*; but the amount of information contained—one might almost say concealed—within the bound volumes in Redruth library ensures that only with the least important mines is the author really low on facts.

The second volume contains almost 500 pages covering mines in the southern part of the author's chosen area. It includes several of the 'greats'—the Bassets, South Condurrow, the Grenvilles and Dolcoath. The same painstaking attention to details, perceptive observations based on experience in hard rock mining, and impeccable editing and printing permeate the text as in Volume 1. It is therefore unfortunate that reproduction of the half tones is well below standard. The saving grace is that many of them—perhaps too many—have previously been published elsewhere.

Such works as this are, of course, only intended for the serious student of mining history. Accordingly over Christmas the reviewer decided to try using the diagram on page 333 to locate the shafts on Buller Downs, taking with him a Xerox copy of the

first edition OS 25-inch as a 'crib sheet'. It soon proved impossible to identify the shafts without the crib sheet because the scale of the diagram is much too small; it doesn't even show all the roads. Most of the other diagrams are better but it must be remarked that the standard of illustrative matter falls short of that of the text.

Any attempts to unravel the intricacies of Cornish mining history during its 19th century heyday inevitably result in the exposure of 'grey' areas which may merit further research. One where the reviewer believes the author's interpretation may be wrong concerns the short-lived last working of Penstruthal Mine. The author surmises that Walton's Engine, as a 60-inch engine erected in 1880 was christened, stood on an old shaft previously called Greene's in the northern part of the sett. Dines asserts that the Walton's Shaft was originally Hodge's in the south but the author dismisses this.

Comparison of the 1st and 2nd edition 25-inch OS maps (survey dates approximately 1878 and 1907) and close inspection of the ground, however, indicate that Dines is correct. The two OS editions show no alteration to the ruins at Greene's Shaft (where an earlier engine had stood) such as would have occurred if an engine had been erected there between the survey dates. Indeed the few walls still standing at Greene's appear unchanged even today! But there are traces of two engines at Hodges.

Mr Morrison also erroneously refers to the 70-inch engine-house on Wheel Buckett's Shaft as still standing at the time of writing, though it has been demolished for many years. Such a slip, however, should not detract from the sheer mass of correct and substantiated facts in the book which is a *must* for the bookshelf of any serious student of Cornish mining. **KB**

### Pemberton Colliery Cornish engine

Can any member who knew the late Capt Alston throw any light on the whereabouts of certain drawings which were in his possession? They showed a Cornish beam engine built by Haigh Foundry in 1820 and used for many years at Pemberton Colliery, near Wigan. Later in 1873, this engine was subject to a most extraordinary conversion when a new inverted cylinder was fitted over the shaft and the old cylinder dispensed with, the original beam being retained for working the valve gear and air pump.

The drawings are wanted for borrowing by a local group who are writing a history of collieries in the area. Any information to the Newsletter Editor please.

### Steam at Coldharbour

Just before Christmas, the cross-compound Pollit & Wiggzell mill engine at Coldharbour Mill Museum, Uffculme, near Tiverton Junction in Devon was run under steam for the first time since the mill closed. The starting ceremony was performed by the Rev Michael Pollit, a direct descendant of the owning family of the firm who built the engine in 1910.

The engine runs unloaded but the cotton rope drives to the various countershaft pulleys have been retained for realistic effect. Speed control is by hand but it is hoped to make the governor effective for 'light' running in the near future. Steam is provided by one of the pair of Lancashire boilers on the premises. The Museum is open through the year and it is planned to steam the engine on four days every month during 1984, starting over the Easter weekend.

### The Thomases of Camborne

"Do not despise the Poldark novels. They are a good mirror of the society of the period." This comment by Professor Charles Thomas at a crowded lecture meeting of the Society on 25 November may have surprised some and encouraged others. While in one way the history of a family was only of interest to the members of that family, from the history of a single parish or a single family could be drawn a parallel of Cornish history as a whole. At the end of the Civil War Cornwall was in a delayed late Mediaeval state, but mineral wealth, sea connections, cheap labour and water power came to change all that. Between 1750 and 1850 a distinct entrepreneurial middle class arose, devoted to Methodism which flourished in the face of a weak established Church.

The Thomases could number over forty mine captains in the family. Charles Thomas managed Dolcoath from 1844 to 1857 and his son Josiah succeeded him, to carry on until the end of the century. Josiah was reckoned to "know tin" better than any man in Cornwall and did a great deal of consultancy work. He was a tall, bearded man, three-foot across the shoulders, of striking appearance. His influence was great and he campaigned for mining classes and schools. At one stage he turned down the offer of managership of Rio Tinto in Southern Spain at the

unheard of salary of £2,000 pa. Nevertheless, Professor Thomas said that mining was not the be-all and end-all of his great-grandfather's life: this was true of the members of the family as a whole. Mining was a job they paid to do and they were capable of being really much more committed to furthering Methodism or some other cause. One can too easily romanticise the mining life of Cornwall.

Professor Thomas made the point strongly that with the dispersal of records since 1945 it is nearly too late to write the social history of Cornwall and that only the detailed study of a parish or town will provide the basis for it. Those at the lecture could hardly doubt that such families as the Thomases are not likely to emerge in the future. Whether or not they felt themselves solely devoted to mining, personalities such as Josiah Thomas commanded a respect in a large but close-knit community which can never be matched today. For his funeral thousands lined the street of Camborne. It was the last great mining funeral and marked the end of an era. That there are no such men of influence today is in itself a mark of social change.

### Cornish engine restoration

Two of our members are actively engaged in Cornish engine restoration projects. Here are their reports:

**Cruquius (Holland)**—Jan Verbruggen writes: "We now have one volunteer who has the necessary enthusiasm, time and experience to assist in preparation work for possibly moving the engine using 'the hydraulic' one day. We have dismantled one of the check valves of the hydraulic and found it to be in reasonably good condition. It is a hemispherical bronze valve, guided above and below the seat by a stem. We are a bit worried, however, because there is still some water in the cast iron bottom (low-pressure) part of the valve housing.

"Before we can investigate the outside of the housing and the connecting pipework, we shall first have to drain and clear the space around the cylinder foundation block. This will, hopefully, also provide access to the bottom end of the cylinder holding-down bolts. These bottom ends have been immersed for at least 50 years as they are below polder level, and they could be badly corroded. We might find that the cylinder is held down by its own weight only, but as this is an inverted engine with very light holding down bolts anyway, their condition may not matter a great deal.

"We have also started taking apart the single 'hydraulic valve' which bypasses the check valves during the equilibrium stroke. The problem is, something is stuck inside and lifting the cover from the stem is not easy either. I suspect it is a slide valve with a balanced piston, but we won't know until we've had another go at it . . ."

**Kew (London)**—Kenneth Brown writes: "Work on the Maudslay 65-inch engine of 1838 is proceeding but we have a tremendous workload if we are to achieve the proposed inaugural steaming date of 8 September.

"Most of the work on the Maudslay is being done at weekends with a high volunteer participation. Removal of several tons of cast iron weights from the balance box was not helped by loss of our front entrance due to Thames Water Authority's work on the new pumping station. Each one had to be trolleyed down a ramp and through our main hall which was not practicable with visitors present.

"Next came removal of the double-beat pump valves and cleaning out the sump and valve chambers. The dirt and rust encountered in this process defy description! Attention was then turned to the condenser, dismantling the air pump and cleaning out the condenser cistern. For some reason, the engine's feed pump and pipework had been dismantled during its working life. "One big problem is several feet of silt which has accumulated in the pumping sump, which raises the question of how we are going to recycle the water and put a load on the engine. When some lifting tackle slipped and we sent a diver down to recover the engine's feed pole, our worst fears were confirmed. There no longer appears to be any opening underwater through which the offending material may be sluiced.

"Meanwhile items of underfloor linkage for the cataract and treadle weights which were found seized or badly worn have been rebuilt, and descaling and painting of parts is carried out as they become available. Any members in the London Area who would like to become involved are asked to contact Ron Plaster who is in charge of the work on 01-568 4757, or call in at weekends."

### Trevithick's locomotive replica

In connection with the photograph on page 1 of the November newsletter, we have been informed that the locomotive is steamed at Cardiff on the first Saturday of every month through the year.

### East Cornwall branch

The East Cornwall branch of the Society is now in business with Mary Smyth as Chairman and John Stengelhofen as Secretary. Their names have been duly added to the list of officers on the front page of the Newsletter. A letter outlining the branch's activities has been sent to members of the Society who live in the north and east Cornwall district, stressing the fact that all members are welcome to attend branch meetings, though the latter are particularly aimed at those who find it difficult to attend events centred in Camborne-Redruth.

Visitors and prospective members are also welcome to branch as well as main events. Either of the responsible officers will be pleased to deal with members' queries.

The branch programme for 1984-85 is given below—all members should keep it carefully and note the dates in their diaries for reference. Kindly note that all indoor meetings will be held at Webb's Hotel, Liskeard, at 7pm for a prompt 7.30pm start to the lecture:

- Friday 2 March *Industries and shipping on the River Tamar*  
— John Stengelhofen
- Friday 4 May *History of the Cornish enginehouse*  
— John Wellington
- Friday 1 June *Engines of South Caradon Mine*  
— Kenneth Brown
- Saturday 2 June FIELD TRIP: *South Caradon Mine*, led by Kenneth Brown. Meet outside the Sun Inn in Crows Nest village at 1.30pm.
- Friday 13 July *The railways from Caradon to Looe*  
— Michael Messenger
- Saturday 14 July FIELD TRIP: *The railways of Caradon*, led by M. Messenger. Meet outside the Cheesewring Hotel, Minions, at 1.30pm.
- Friday 14 September *The mines of East Cornwall*  
— Justin Brooke
- Friday 2 November *Blowing houses*  
— Bryan Earl
- Friday 8 February 1985 *The history of the Bude Canal*  
— Mary Smyth

### Leslie Wallace

It is with regret that we received news of the death of Leslie Wallace on 26 October. He was 72.

Mr Wallace, who lived in Redruth, was Hon Secretary of the Society for just a few months in 1980 until he was compelled to resign due to ill health. He started his career on leaving school with the firm of Sir Arthur Carkeek, civil engineers, Redruth. He spent some 4½ years in Wiltshire and also a period in Padstow and Plymouth for the company. During the war he served in the Royal Engineers in the Middle East attaining the rank of Staff Sergeant. After hostilities he joined the Camborne-Redruth Urban District Council and retired in 1973 for health reasons.

He was a founder member of the Cornwall Railway Society, a member of the Cornish Methodist Historical Association and, for 25 years, was local secretary of the Federation of Master Builders.

The Society extends its sympathy to his widow and daughter.

### Additional field visit

- Sat 31 March Meet at 2.00pm at Carn Galver enginehouses on the B3306 Morvah-Zennor road, Grid Ref. SW 421364, to explore and interpret two areas:
  - Carn Galver mine and the mill at Bosigran Cliff
  - Lower Porthmeor stamps.

Further details: Bill Newby, Tel: Penzance 740337

### BRISTOL CITY DOCKS

#### Film show Thursday 17 May

Prior to the Society's visit to Bristol on Saturday 19 May, two films will be shown at the Camborne School of Mines, Pool (NOT the Community Centre) at 7.30pm on THURSDAY 17 May. "Bristol Fashion" was made for the Port of Bristol Authority in 1963, by AB Pathé. It shows the City Docks in full commercial operation. There is now no commercial trade in these docks. The film gives the background of the City's maritime history and importance.

The second film "The Great Iron Ship" gives a stirring account of the SS *Great Britain's* homecoming from the Falklands and was made for BBC TV.

### Coach trip, Saturday 19 May

The visit itself, on Saturday 19 May, will use coach travel for members travelling from Cornwall and offers excellent value at an all-in cost of £7 per adult. It will include the Bristol Industrial Museum or National Lifeboat Museum, to choice; the SS *Great Britain* in an advanced stage of restoration to her 1843 condition; and Underfall Yard workshops and hydraulic pumping station, still fully equipped virtually as they were in circa 1885 and 1908 respectively.

Due to restriction on numbers at Underfall Yard, all members proposing to attend the visit must fill in the pro-forma at the foot of this page and post it to Miss Rule as soon as possible after receiving this Newsletter. Those using the coach must send the full cost of the coach fare as specified and say where they propose joining (Camborne, Liskeard or Exeter). Those making their own way should say so on the pro-forma and join the coach party on arrival at Princes Wharf, Wapping Road, Bristol at or before 1 pm.

Applications will be dealt with strictly on a 'first come first served' basis.

Schedule for the visit is as follows:

- 0830 — Prompt departure from Camborne Community Centre, South Terrace. Cars may be parked here.
- 0945 — Pick up in Liskeard Town Centre, adjacent to car park at far end.
- 1130 — Pick up at Exeter M5 motorway service station (there will be time for those travelling from Cornwall to disembark briefly)  
Picnic lunch to be eaten on board coach
- 1300 — Arrive Princes Wharf, Wapping Road, Bristol City Docks, where members making their own way will join the party.  
Visit adjacent Industrial Museum and/or National Lifeboat Museum
- 1345 — Muster outside Industrial Museum and walk along Wapping Wharf, westward, via steam crane, to *Great Britain* car park (proceed in coach or cars if wet).

#### Party A (20 people, port side of coach)

- 1400 — Muster at *Great Britain* entrance
- 1515 — Depart in coach from GB car park to Underfall Yard
- 1525 — Arrive Underfall Yard for tour
- 1710 — Board coach in Underfall Yard

#### Party B (20 people, starboard side of coach)

- 1400 — Proceed in coach from GB car park to Underfall Yard
- 1410 — Arrive Underfall Yard for tour
- 1535 — Depart Underfall Yard for GB
- 1545 — Arrive *Great Britain* for tour
- 1700 — Depart in coach for Underfall Yard
- 1710 — Arrive Underfall Yard

#### All visitors

- 1715 — Coach departs from Underfall Yard for Cornwall, setting down members whose cars are at Princes Wharf en route.  
Take picnic tea on board coach
- 1845 — Short stop Exeter motorway service station
- 2030 — Arrive Liskeard town centre
- 2130 — Arrive Camborne Community Centre

All queries to John Corin, Programme Co-ordinator, phone Penzance 3739.

### APPLICATION FOR BRISTOL VISIT — Saturday 19 May 1984

To Miss E.M. Rule, Programme Secretary,  
3 Treswithian Downs, Camborne, Cornwall TR14 0BX.

Please send me ..... coach ticket(s) @ £7.00 each (£3.50 for under 16s), for which I enclose cheque/P.O. for £ .....

I/We shall join the coach at Camborne/Liskeard/Exeter

I/We shall join the party at Princes Wharf, Bristol

(delete as applicable)

Name .....

Address .....

Postcode .....

Tel. No. ....