

103. Thomas Bain

THOMAS BAIN (1830-1893) : PIONEER ROADBUILDER

(A talk presented to a joint meeting of APES, SA Institute of Architects, SA Institute of Town & Regional Planners, SA Institution of Civil Engineers, SA Institute of Land Surveyors, et al, at the Athenaeum, on the evening of 29th September 1993, being the centennial of Thomas Bain's death)

INTRODUCTION

Thomas Charles John Bain died one hundred years ago today (29/09/1993), on his sixty third birthday.

As he lived and worked essentially in the Cape Colony it is fitting that the memorial celebrations of which this talk is a part should be held in the Mother City, Cape Town.

This morning saw plaques in his honour unveiled where he was buried in St Thomas' Churchyard, just down the road from where we are now, and at the neck where Victoria Road crosses the mountains to get to Hout Bay. A wreath was also laid on his grave-stone in the Cultural History Museum at the top of Adderley Street. The South African Institution of Civil Engineers has arranged this evening's gathering as an additional tribute to a great South African road builder.

I think I should say something about the man, before I get onto his engineering works. Probably everything that can be said has already been said at the other ceremonies held earlier today, but as not all of you were at all of them I shall give a short run-down.

Thomas Bain was born on 29th September, 1830 in Graaff-Reinet. His father, Andrew Geddes Bain, born in Scotland, came to South Africa in 1816 at the age of nineteen. In his varied career Andrew was in turn saddler, inn-keeper,

journalist, trader, explorer and soldier, as well as being an honoured and greatly respected road builder. Arising from his road building activities he developed great interest and ability in geology. He in fact produced the first geological map of South Africa, and it is not surprising to hear that he has been called "The Father of South African Geology".



Andrew Geddes Bain

Andrew Bain built his first mountain pass up the Ouberg outside Graaff-Reinet in 1832, although it was only in 1835 that he devoted himself full-time to road building, initially on military roads. From 1846 he worked under Charles Michell (Surveyor-General, Civil Engineer and Superintendent of Works) and John Montagu (Colonial Secretary for the Colony) who between them were responsible for starting the great age of road building in South Africa. In the first eight of these years Andrew was responsible for Michell's Pass to Ceres and Bain's Kloof linking to Wellington. It is probably not generally appreciated today that the construction of these two passes removed the main obstacles on the established route to Kimberley and, later, the Witwatersrand. At the same time as he was busy on these passes he also completed Gydo Pass and reconstructed the Houw Hoek Pass.

Thomas Bain served his apprenticeship under his father as an Assistant Inspector of Roads from 1848 to 1854, working mainly on Michell's Pass and Bain's Kloof. This learning period,

under such an experienced and inspired engineer as his father, gave him a solid base on which to develop his subsequent career. In 1854 he was promoted to Inspector of Roads for the Western Province, but his and his father's careers continued to be intertwined – until Andrew's death in 1864.



Thomas Charles John Bain

Also in 1854 Thomas married Johanna de Smidt, ninth child of Willem de Smidt, the Secretary to the Central Road Board. They had a long and happy marriage, being devoted to one another and to their thirteen children. Johanna, like a good padmaker's wife, followed Thomas happily wheresoever his work led him.

For much of the above detail I am indebted to that excellent publication "A Colossus of Roads", written by Patricia Storrar, illustrated by Gunther Komnick and sponsored and published by Murray & Roberts/Concor. This book is truly a valued addition to the literature of our country, and I recommend it to anyone here who would like to read further about the domestic history of the Thomas Bain family.

And while I am talking of possible further reading, let me mention that one's researches are liable to become confused at some time by books about and references to one Thomas Baines, FRGS, of Kings Lynn. Thomas Baines was a contemporary of our Thomas Bain, living from 1820 to 1875. He was an explorer and a prolific artist, and reproductions of his paintings and sketches made during his African travels will be found in many books about the era. He is, however, unrelated to Thomas Bain, the padmaker.



THOMAS BAIN'S CAREER

Thomas Bain and his six brothers and sisters were educated largely at home, as were most of the settlers' children of that time. This came to an end with the outbreak of the War of the Axe of 1846, when he served as a volunteer, guarding the women and children in the church at Fort Beaufort.

I am now going to quote from a document headed "***Record of Thomas Charles John Bain's Services***", signed by Thos Bain on 10th May 1893, which one of his descendants, Mike Orpen, has kindly made available to me:

"In April 1848 I received an appointment under the Central

Road Board of the Colony as an Assistant to Mr. A. G. Bain, who was then engaged in the construction of Mitchell's Pass, near Ceres.

"After having acquired a knowledge of Road Engineering in all its details, I accepted the office of Superintendent of Convicts to become thoroughly conversant with the practical workings of the Convict system.

"In 1854 I was appointed Inspector of Roads for the Western Province, after having passed an examination in Civil Engineering etc under the then Colonial Engineer and the Superintendent General of Education of the Colony, in terms of a certain syllabus published in the Government Gazette for the information of any candidates who were able to avail themselves of the opportunity. Out of the five candidates who went up for the examination, two passed of whom I was fortunate to be first on the list.

"In conjunction with the above office, I held the appointment on several occasions of Visiting Magistrate of the Convict gangs employed under my general supervision on Road works.

"From March 1873, I held the appointment of District Engineer in the Railway Department for 18 months, on the Wellington extension of the Railway, but as there was a difficulty in finding a successor to fill my office in the Road Department, I rejoined that Department on more advantageous terms. In 1877, I became an Associate of the Institution of Civil Engineers.

"During the tenure of my Road Office, I designed and completed the following works, viz:- Gray's (sic) Pass, formerly called Piquiniers Kloof; Tulbagh Kloof; Prince Alfred's Pass (Knysna) a work of many engineering difficulties, extending over several high mountain ranges and through dense forests – 44 miles in length; a pass from Long Kloof (Avontuur) to Uniondale over the Gwarna Range; Robinson's Pass and its

extensive adjuncts; George and Knysna road – 54 miles in length – embracing several mountain passes of considerable magnitude, and crossing many rivers; the Zitzikama (sic) road – 70 miles long – carried over a series of mountains and rivers, by which a terra incognita of valuable Crown land and forests was opened to the public; Tradouw, now Southey's Pass; Garcia's Pass; **Cogman's Kloof Pass**; Molteno Pass and its northern extension towards Carnarvon; de Jager's Pass; Oudekloof Pass; the Great Zwarte Berg Pass – a work of considerable magnitude and engineering difficulties; Schoeman's Poort Pass; Baviaans Kloof road; Deviation in Montagu Pass making a short cut to George; the reconstruction of Meiring's Poort which was entirely washed away in 1885; the Klein Zwart Berg road; the Verlaten Kloof and road over the Koodoo Bergen; the Koo Mountain Pass; the Pakhuis Mountain Pass with its adjuncts towards Calvinia; the Van Rhy'n's Pass and its approaches; the high road from Clan William to Namaqualand embracing a series of small mountain passes; Blue Krantz Mountain road; and the Victoria Road from Sea Point to Hout Bay, together with a number of other mountain passes of minor importance, and various sections of hard road in the Western and Midland Provinces, amounting in the aggregate to over 560 miles: also a number of wooden bridges in those Provinces.

“All my works were executed by unskilled Convict labor, making it thus more difficult than by skilled workmen and artisans.

“In 1888, I was appointed Irrigation and Geological Surveyor of the Colony. In that capacity I have designed and completed a large Reservoir (Verkeerde Vley) by which the Railway Dept. admit saving over 6000 pounds sterling a year in a water service to the Touws River Station; a weir across the Vaal River and a furrow of 9 miles long are in the course of Construction (nearly completed) for an irrigation scheme of valuable Crown land, and for a water supply for the village of Douglas.

“Several surveys have been made for large irrigation schemes along the Orange River, and numerous plans projected for large dams in different parts of the Colony for irrigation purposes, besides locating various water services for Villages and Towns either by pipes or furrows – and utilating (sic) the Van Wyk’s Vley and Stoltz Hoek Dams – which were practically useless – by means of diverting water from other sources into them.

”SURVEYS: Besides the numerous Road Surveys made, I was specifically employed in making a preliminary Survey of the Railway Extension from Port Elizabeth via Alice Dale to Cookhouse drift, and also of the branch line to Grahamstown from Alice Dale in concert with Mr Brownger Sr, and subsequently making a preliminary survey of a Railway proposed from Graaff-Reinet to Richmond over the Great Snieuwberg Range.

“GEOLOGICAL WORK: In this branch I have from time to time been engaged in making large collections of reptilian remains from the Locustrine beds of the Karoo for the British and Cape Museums, and reporting on the mineral resources and discoveries of Minerals in the Colony, such as the Knysna, Prince Albert, Barkly West and Namaqualand Gold Fields, and the Coal fields of the Eastern Province and the Free State.

“WATER BORING: In connection with the Geological formations of the Karoo, I pointed out in various papers on the subject the existence of vast subterranean stores of water, which I am glad to say are being successfully developed by means of the hand Diamond Drill, of which there are eleven at present in operation, and one lever drill.

“From the date of my appointment, it will be observed that I have just completed a period of 45 years service, to which if the usual seven years be added for professional work, I count 52 years. During my long service, I have only had one month’s leave of absence, and occasionally a few days at a time, so that I might call it 45 years continuous service.

“NATIVE WAR: Before I joined the service, I served as a Volunteer in the Native war of 1846 when I was only 16 years of age.

“I omitted to mention that my services were specially engaged last year by His Excellency the Governor for Imperial Work viz:- to report on the Geological formations in reference to the underground water supply of British Bechuanaland from Vryburg to the Palah Camp on the Crocodile River with a view to boring for water. I accompanied my report with a Geological Sketch Map of that tract of country. I also reported fully on a water service at Vryburg and Mafeking by pipes, giving delivery of each spring separately and estimated cost in detail of those services. I obtained the special thanks of His Excellency the Governor for what I had done, and subsequently those of Lord Ripon, the Secretary of State for the Colonies.

“I also completed a similar report of the Great Waterless country known as Bushmanland in the Colony, which I accompanied by a Geological Sketch Map on which sites for boring were fixed, and operations are already in force there with a diamond hand drill.

“(Signed) Thos. Bain

10th May 1893”

You will note that this Record was prepared only four months before his death, when he was worn down and in ill health following an arduous trip in a small ox cart to investigate suitable irrigation sites near Upington. It can therefore probably be taken as a complete summary of his career.

BAIN'S MOUNTAIN PASSES:

The Record above includes a full list of the mountain passes for which Thomas Bain was personally responsible. Now, obviously he could not have fitted this number into his period

of responsible service with the Road Department (thirty four years from 1854 to 1888) if he had concentrated on the completion of one before going on to the next. Luckily he must have had some reliable construction supervisors on his staff whom he could trust with the day-to-day running of the jobs – and of the (sometimes hundreds of) convicts engaged on the works. He kept no diary, but it is recorded, for example, in his annual report to March 1879 that he controlled work on Tradouw Pass, an irrigation canal at Heidelberg, Molteno Pass, De Jager's Pass, the Oukloof Road, an extension of the Pakhuis Pass and the commencement of the Tsitsikama road and passes! In addition, in that year he carried out inspections on twenty six roads, as far flung as Meiring's Poort and Piquetberg! No wonder that the Chief Inspector, in his report for 1877, criticised the number of works which Bain was expected to undertake. However, road engineers are (even today!) used to being faced with excessive demands on their capacities, and so Bain soldiered on, continuing to produce vast amounts of high standard road works.

To realize why early travellers were prepared to struggle over steep mountain passes instead of "going around" one must appreciate travel speeds at that time. Major Charles Michell you will remember was Surveyor-General of the Cape Colony, and his figures will therefore be as accurate as one can get. He wrote, in 1836:

"From a road-book compiled chiefly from my own notes whilst travelling on horseback, and in wagons drawn by horses, I find that the following may be esteemed a fair average rate of travelling here, viz- on horseback, six miles per hour; in a horse-wagon, from five to five and a half; and in a wagon drawn by oxen, three."

So "going around" could take considerable extra time – and our mountain ranges generally stretch a long way!

The high ox wagons could not go diagonally across the mountain

slopes to ease the gradient without being in danger of rolling over, so they tended to travel more or less at right angles to the contours. Generally speaking they could not travel up the wooded kloofs, so they often were unable to cross the mountains in the necks, and on occasions (as at Duivelskop behind George) travellers were forced to commit the apparent absurdity of taking their wagons over the mountain peak. Also, on steep slopes it was necessary to have all the inspanned oxen pulling fairly on the wagon, so sharp vertical or horizontal changes of direction were to be avoided.

This all makes more believable those sketches of ox wagons scaling slopes which appear to be impossibly steep. In fact, the more one reads, the more believable they become, and the more one's admiration for these indomitable travellers grows.

When, as the country was opened up, horse wagons, horse carts and horse traps wished to travel across the mountains, the steeper ox wagon routes were not suitable. So pass roads were constructed at an easier gradient, such that they might be traversed "at a brisk trot" as Michell says of his Sir Lowry's Pass, built in 1830. Because of the limited speed of horse-drawn vehicles gradient was the controlling factor and reasonably sharp curvature was acceptable. (The constructed roadbeds of course also allowed freight wagons to take advantage of the lesser gradient without toppling over).

This was the stage at which Thomas Bain was operating.

To return now to our main subject, certain of Thomas' mountain passes are particularly well known, and I should like to remind you of them.

Grey's Pass, completed in 1858, replaced the rather hairy Piekeniers' Kloof, and opened up the Olifants River valley to the Swartland and to the Cape Town market. This was the first major pass for which Thomas was responsible. Grey's Pass was on a different alignment to the old Piekeniers' Kloof, but

when it was reconstructed in 1958 the old name was revived.

Prince Alfred's Pass, which crosses the Outeniqua Mountains to connect the Langkloof to Knysna, was opened to traffic in 1866. It replaced the frightful route over Paardekop, which had given early travellers something to write about for ninety years. The pass is one of those which is in parts still on its original location, and I am sure that many of you here tonight will have enjoyed travelling this route.

The construction of the Passes Road between George and Knysna took fifteen years from 1867 to complete. This road, besides linking Knysna to the more developed areas to the west, replaced the dreaded river crossing at Kaaiman's Gat, which early travellers also described with loathing!

Bain next built a series of crossings of the Langeberg and Outeniqua Ranges. These were the Robinson, Tradouw, Garcia and Burger's Passes and the **Cogman's Kloof** road, all of which helped greatly to open up the hinterland.



A plaque which was once to be found at the tunnel on the Cogmanskloof pass

Wording on plaque: *This Pass was built in 1875 – 1877 by Thomas Charles John Bain (1830-1893). Son of the pioneer road builder Andrew Geddes Bain. Thomas Bain built many roads and twenty-two passes in the Cape Colony.*

The 185 kilometre Tsitsikama road, linking the western and the eastern portions of the Colony through the indigenous forests of the coastal plain, involved the crossing of the Groot, Bobbejaans, Bloukrans and Storms Rivers gorges. The old route below the new toll freeway provides the present day traveller with spectacular views, and undoubtedly fills him with respect for the man who pioneered it.

“Everybody” knows the Swartberg Pass! Bain built this monumental piece of work, opened in 1888, to replace Meiring’s Poort as an access route across the mountains, after the road through Meiring’s Poort was repeatedly washed away when the

river came down in flood. It was probably the crowning achievement of his career, and was the last great pass of his era. Its switch-back curves and its massive dry stone retaining walls combine to make it one of the most admired and photographed passes in South Africa.

To conclude this selective list of Thomas Bain's passes, let me mention our very own Victoria Road between Sea Point and Hout Bay, which was his last major road project. It was completed in 1888, the same year – you will notice – that the Swartberg Pass was opened.

1888 was also the year in which Thomas Bain resigned from the Road Department, leaving behind him an impressive heritage to all the people of our country, and many outstanding works which were to inspire the road engineers of the future.

REFERENCES:

In the time allocated to me today I have obviously been unable to do justice to all Thomas Bain's pass works, and I did not intend to try. This talk is more a paean of praise to the man, and a general introduction to his life and works. If you would read further, may I refer you again to Patricia Storrar's *A Colossus of Roads* (my acknowledgement and thanks once more to her for many of the facts in this short talk), to Jose Burman's *So high the road* (1963:12-15), to Tim Goetze's monumental thesis *Thomas Bain, road building and the Swartberg Pass* (1993:23-28; Appendixes 4 & 5), and also to *Mountain Passes and Poorts : An Annotated Bibliography*, prepared for the Division of Transportation Engineering of the SAICE, which will introduce you to many more references.

CONCLUSION:

The two plaques unveiled today join a notice board on the Swartberg Pass, a bronze plaque in **Cogman's Kloof** and another in Prince Alfred's Pass in reminding us of this outstanding engineer and his works. These are truly little enough when one

considers that it is padmakers like him who opened up the country beyond the mountain barriers, making development, expansion and economic growth possible.

Thomas Bain was a pioneer who showed the way to those who, like myself, followed in his footsteps. I am proud to have had the opportunity to present this paper in his memory and in appreciation of his work as a pass and road builder.

Long may the memory of Thomas Charles John Bain remain with us.

****finis****

Graham Ross/Cape Town/September 29th, 1993

As a sort of bonus, as it were, I add a transcript of a letter written by Thomas Bain to his wife in 1887:

Office of the Chief Inspector of Public Works/Verkeerdervelei/14
June 1887

My dearest,

We arrived here on Sunday in time to pitch our tent and make ourselves as comfortable as camp life will admit of. The road to this from Karoopoort is ten times worse than the Blaauw Hoogte – your favourite spot – yet the horses did well, not a fault did they make. The cart was fearfully heavy.

We had a little adventure on the road however, which might have been a serious affair. Just as we outspanned at Hottentots Kloof, an ostrich attacked us. First Willie and I tried to beat him off with a whip & by throwing stones at him, but he came with such force that we had to rush and jump on the cart. The brute actually jumped in the cart too – bent one lamp iron & we scrambled to the back seat when the cart tipped up – pole in the air, but the bird fell out – Willie

then struck him with the butt end of the gun, as he made his second attack on us in the low position of the fallen cart.

He was slightly stunned by the blow Willie gave him, and I rolled out of the cart in some way or other, and hurt my hip very much, and I got a slight kick on the shin bone. I have been quite lame for two days, but am able to walk again. I got some embrocation to rub it with & I am all right.

We had a narrow escape. The gun was not loaded otherwise I would have shot the ostrich.

He had to be driven away by dogs afterwards, as he would not leave the cart. The farmers say they have never known an ostrich to attack or jump into a cart.

I am getting on nicely with my work here. I am afraid I shall not have the benefit of the Jubilee holiday.

The cold was intense here last night – the water in our bucket one mass of ice. Both W. and I find that we must sleep with our clothes on to keep the cold out. I shall have fully 8 days work here. We have got lots of kos and plenty of fine wood – I had a supply of sausages made for me at Ceres – the pork and lamb comes in well that you sent. You forgot Willie's old boots –

G?i? has been pestering me with telegrams. The slightest thing he is unable to answer.

It takes up so much of my time.

I am giving Willie a good practical lesson in surveying. Christiaan (?) is simply perfection in the field.

Kind love to all the children and to yourself.

From yours fondly

Thomas

