STEAM LINES

NORTHERN DISTRICTS MODEL ENGINEERING SOCIETY (PERTH) INC.

July — August 2008

Why not 3½" GLT?

by David Naeser

Inside this issue:

NDMES
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Western Australia

Above: A large 3½"gauge South African Railways Class 25 loco waiting for the all clear to leave with the midday passenger train, taken during a recent trip to Cape Town. Move over 7¼" gauge Simplex! Photo: David Naeser

.As members may know, I am keen to see the new ground level track (GLT) incorporate a 3½"gauge line. Those of us who have driven on ground level tracks will know that there is no comparison between GL driving and elevated tracks.

One can enjoy a real railway driving experience with loops, crossings, points and sidings. The delay experienced on an elevated track at the station when a train is being loaded, a loco is being serviced (or coaxed into life), can all be avoided with passing loops. Drivers can take a comfort break without blocking the track and best of all, trains can be assembled off the main line and driven straight onto the main line complete with coaches and drivers, avoiding the snarl-ups we have as trains are brought on and off the track. Next best is that the coaches need not be man-handled on and off the track, but can simply be stored on sidings during the day ready to be shunted onto the train.

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CALENDAR OF EVENTS

General Meeting	Kentin Engineering Malaga—see page 4	8:00 pm	Friday 12 September
Club Run Day	Club Track Site Vasto Pl, Balcatta	From 8:30 am	Sunday 14 September
Public Run Day	Club Track Site Vasto Pl, Balcatta	11:00 am—3:00 pm	Sunday 28 September
Annual General Meeting	Club Meeting Room Vasto Pl, Balcatta	8:00 pm	Friday 10 October

July General Meeting

The July General Meeting was held on Friday 11 July 2008 at the Society's meeting room commencing at 8:00pm, chaired by Milton Smith.

The full Minutes of Meeting are enclosed with Steamlines as a separate Supplement for members. Some highlights of general interest are reproduced here.

Model Engineering:

Milton Smith showed the turnbuckles for the brake gear for "Andrew G Trigg." These had been blackened by a chemical process used to "blue" gun barrels.

Marcus Jones showed his Gauge 1 4-6-0 loco which is a cross between a Castle and Black Five. Marcus described its evolution to the current configuration as a gas fired radio controlled engine. A fine piece of work.

Paul Costall. At the other end of the modelling scale, a Tee section rim and hub for the rear wheels of his and Ron's 4" scale traction and showman's engines.

Nigel Sale has a large quantity of transfers for scale models of British locos and traction engines, they are unsorted. See Nigel if you are looking for transfers.

Andrew Manning showed the wheeled chassis and cylinders of a 5" Springbok he is rebuilding.

Ron Collins showed cranks for the 4" traction engine. These are built up. Using the wire cutter, Ron has been able to produce small flats in the crank pin and shaft holes to locate the respective shafts which have matching flats.

The formal meeting closed at 9:15. Members enjoyed refreshments and discussion. Details of several boilers were discussed with boiler inspector Phill Gibbons.

A video was shown describing the cab one of the 2-8-0 15" gauge locos of the Romney, Hythe and Dymchurch Railway, "Hercules."

August General Meeting

The August General Meeting was held on Friday 8 August 2008 at the Society's meeting room commencing at 8:00pm, chaired by Milton Smith.

A suggestion has been made about timing of General Meetings — every other month on the Friday night, with the alternate month to be held on Sunday mornings. This decision will be left to the incoming Committee.

Model Engineering:

Jim Clark showed a steering wheel for his Allchin traction engine fabricated in stainless steel.

George Palmer showed a side rod for his $7^1/_4$" SA 500 class loco - a big piece of metal.

Meeting closed at 8:45. Members enjoyed a cup of tea and discussion. Milton Smith played a DVD featuring Sandgropers 2007, his ride on the RH&DR and the removal of the coach. The boiler inspector Phill Gibbons was also busy reviewing drawings and offering advice.

Above: Components to make an Allchin steering wheel. The central spider is laser cut, the outer ring and bushes are machined from stainless, then it's all silver brazed together. Photo: Jim Clark

Work Around the Track Site

Above Left: The whole Costall family hard at work on grounds maintenance. Above Right: Stan Armstrong checking the new GLT earthworks. Photos: Milton Smith

President's Report for August

by Milton Smith

Quite a lot has happened on site in the last two months. The earthworks that have been done with finance from the Lotteries Commission have altered the 'face' of the site, and an idea can now be seen how things may look as progress is made on the laying of track.

As part of this work electrical services had to be attended to in order to avoid the "public works syndrome" of the various councils and government departments who seem to delight in digging into what has just been completed by another department. It is quite likely that we may find the same problem ourselves, but we will endeavour to avoid it.

The old railway carriage has gone at no cost to the Society. A couple of photos (from John Shugg) of its removal are included below, and give some idea of the magnitude of the operation required to truck it out. This old vehicle has served the club well over the years, first as a meeting room, and then as a shed. It used to be located where the present clubrooms are. We were glad that it has gone to an owner who intends restoring it and using it as sleeping quarters on a property at Hazelmere.

Sandgroper's Meeting

The Sandgroper's Meeting is on again at Forest Park, Bunbury over the weekend of the 8 and 9 November.

This has always been a popular and pleasant event, so we'll see you there this year! Full details are advertised in the current issue of AME, or contact South West Model Engineers direct.

Please see Andrew Manning or Milton Smith for registration forms if you are attending.

The bridge decking has now been completed, and it looks good. Paul James is shown below putting the 'finishing touches' to the bridge. (Photo: Milton Smith)

On 16 August, a hard working crew, including Tony Jones' son Marcus who managed the concrete mixer, laid the foundation for the brickwork of the turntable with the aid of Tony's 7¼" gauge dump truck. A few days before, it was also used to good effect delivering concrete to supports for the GLT in the steaming bay.

If you wish to obtain items from the library please let John Martin know. He will undertake to get them for you promptly if he does not happen to be in "residence" at the time when you are at the club. His phone number is 9448 8843.

Does any member have an objection to their postal and e-mail address, and/or phone number being published in a Membership Directory? I have one which I use and it would be easy enough to publish one. Please let me know if this is a problem, and also if you would like a copy. I will only print enough for those "ordered". In any case I will not do it until after the AGM, which is due to be held on Friday 10 October.

Milton Smith, President

Why not 3½" GLT? (cont)... by David Naeser

(Continued from page 1)

Aspersions have been cast against 3½" GL track: It has been said that one would not like to see a Tich being pursued by a 7¼"gauge loco. Well, some Tiches that I have seen simply fly, but regardless of that, there is no compulsion for a Tich owner to venture onto the GL track – he could stay happily playing on the raised track if he wished.

It has also been said that 3½" gauge locos cannot safely be mixed with 7¼" locos owing to the significant size difference. I would disagree as in each case, the passengers are the largest component of the trains, and these are the same size for both trains. Train lengths too are generally set by the station platform length, number of trains on the track and the availability of coaches, rather than the loco hauling capacity. In addition, if a loco is unable to keep up on a running day (what ever its gauge) the duty officer should call the driver off the track anyway.

In any event, I am thinking mainly of the larger 3½" gauge locos of 1" scale and bigger (like, ahem, mine or Ed Brown's lovely WAGR DD). Having a heritage of 3'6" main line in WA, it is surprising that we don't have more WAGR prototypes in our club. A 3½" W Class loco would be a pretty impressive loco in this gauge.

It has also been said that you simply can't build multi-gauge 3½", 5" and 7¼" track. Well, I am familiar with many tracks in South Africa where 3½", 5" and 7¼" track share the same foundation. You can see examples of such tracks in the UK in the Model Engineer from time to time, so it is certainly possible and is being done. The points and crossings are not a problem, if care is taken with the check-to-gauge dimensions. The 3½" gauge rails share check gaps with the 5"gauge and the 5" share with the 7¼", so this can all be controlled. There will be a 7¼" gauge flange gap to cross at the 7¼" to 3½" frog, but I have not known the 7¼"gauge flange gap to be a problem here for my locomotive, which has quite small wheels; the crossing angle is normally quite steep by the time this frog is reached.

Points can be the block type (where the whole rail is bodily moved) or the normal type with machined blades. Both work OK. There is no need for the complicated moving frog type, which is being proposed for our GL track. These are a lot of work to make for any gauge and more to make functional for three gauges. SASMEE, who introduced then into the model engineering sphere in Australia, no longer use them on new point work, as the adjustment and maintenance required the keep them functioning well was a burden for the club. They saw no real advantage in them compared to the standard points anyway. In full size they are only used in what are termed "high-speed turnouts", where the crossing angle is very shallow and the frog long and finely tapered and the flange gap at the frog is correspondingly long.

To kindle your enthusiasm for GL operation, I include below a picture of my loco at SASMEE in company with genuine ¾" per ft scale 3½"g loco, the Doris built

SEPTEMBER MEETING

In September, the NDMES monthly meeting will be held at Kentin Engineering at Unit 5, 36 Truganina Road, Malaga. Truganina Road is off Alexander Drive, just north of the Reid Highway intersection.

This meeting will be informal with some interesting examples of engineering large and small for you to see.

Bring along some of your own work for us to look at too, as this meeting will be an opportunity to see and talk about the practicalities of model engineering.

Please note: Enclosed footwear is essential! This is a WorkSafe requirement for entry into the factory.

Also, please **no** photographs inside the workshop, as this is a commercial factory with client's work in progress.

NOTICE OF ANNUAL GENERAL MEETING

The Annual General Meeting of the Northern Districts Model Engineering Society will be held at the Society's Meeting Room at Vasto Place, Balcatta on Friday 10 October commencing at 8:00pm.

If you would like to contribute something towards the direction and have a say in the running of the Society, how about considering nominating for one of the positions on the Committee or Executive?

Why not 3½" GLT? (cont)... by David Naeser

by Alan Wallace (wearing hat). It is truly a wonderful driver's track, with interesting features, mature trees and shady areas, plus bridges, tunnels and overpasses and of course, points and crossings.

It has been suggested that those of us with stiff joints may find 3½"GL a problem: True, the knees may be more bent, but it is really little worse than with 5"GL. It depends on the design of the driving cars, the seat to footrest dimensions and the required reach to the loco. For locos with long tenders it is better to sit on the tender as shown on the class 25 loco on page 1. The club members at SASMEE are not particularly younger than NDMES members, and they seem to manage all right. For me, any added discomfort is well worth the extra enjoyment of the railway-like operation.

We were some time ago requested to consider whether we really needed a 7¼" g track as it is likely that we will not be able to cater for the 7¼" narrow-gauge monsters which run at clubs with larger grounds than us. The extra stability afforded by the 7¼"g line to the passenger cars is well worth the laying of a 7¼" track, even if few 7¼" locos ever run on the line. So this is not so much and article against the laying of a 7¼" track, rather a request to have an additional rail added to the planned 5" and 7¼" gauge lines.

The extra cost of the 3½"gauge line should be small compared to the overall cost of the project, especially as the 3½"g rail need only be 4~6mm wide, as it carries only the smaller locomotives. In fact, I think that there is a good argument for reducing the cross section of the 7¼"g line as a cost saving measure from the proposed 12mm wide material to something narrower, especially as the heaviest localised load comes from the bogies of the passenger cars. The current raised track copes well with four-person passenger cars on its much smaller section rails, and that is with fairly wide spacing between supports.

To show an example of multi-gauge point work, I have attached below a picture of some of the point work on the Cape Town track. The grounds were relatively new at that stage and have come on a long way since then. So as they used to say in the Mitsubishi advert…."Please consider 3½"GL!"

If you want to see some video clips of 3½" GL operation on a combined 3½, 5 and 7¼" track, do an Internet search on YouTube, where you can see a 3½"g SAR 15F owned by Andrew Giffen showing its paces in the UK. Happy Steaming!

David Naeser

President's Comment

David's article appears above. Several years ago it was proposed by David that a $3^1/_2$" line be included into the Ground Level Track plans.

At the time the proposition was not proceeded with, but it may now be an appropriate time to have another look at it. There seems to be a growing interest in this gauge and currently there are two relevant articles in Engineering In Miniature. As far as our track is concerned the most difficult part will probably be the points. The article will certainly encourage discussion.

Milton Smith

Left: Paul James poses with Bushfly after its recent makeover.
Photo: John Shugg

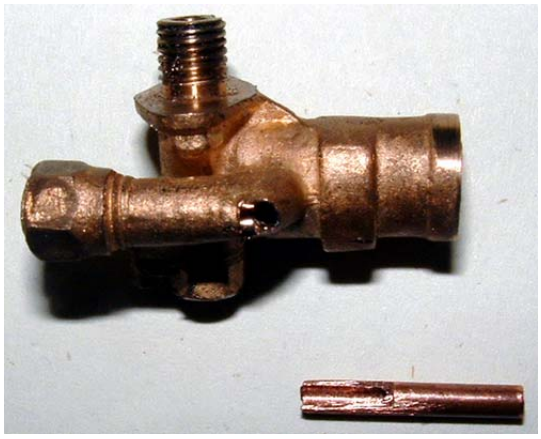
Cylinder Drain Cocks for "Andrew G Trigg"

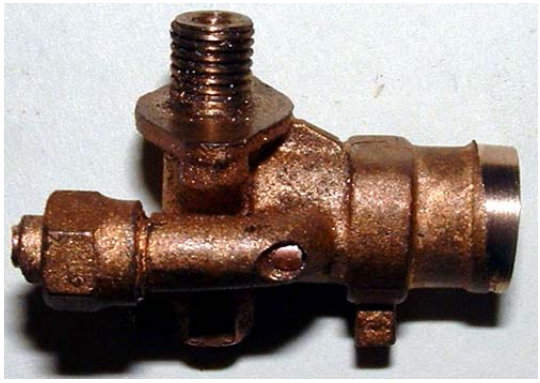
by Milton Smith

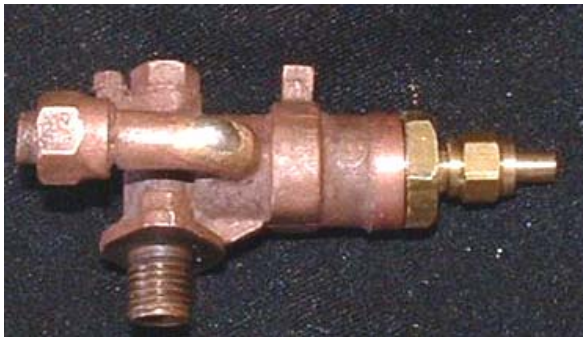
The original specification for "Simplex" does not call for cylinder drain cocks. When I first made the cylinders about 20 years ago, provision was made for these fittings. I had intended to fabricate BR style drain cocks, but when Doug Hewson produced suitable castings, these were purchased.

The castings are lost wax but it proved too difficult to fit a core for the water exit pipe. The original idea put forward was to drill two holes at an angle to each other, and fill up the opening with an 8BA screw silver brazed in place and filed to suit the outline of the pipes.

I decided to try a different method and the photos show the job thus far. The top photo shows the holes as drilled, plus the insert; the middle photo shows the insert in place. The completed job after silver soldering and dressing is shown below.



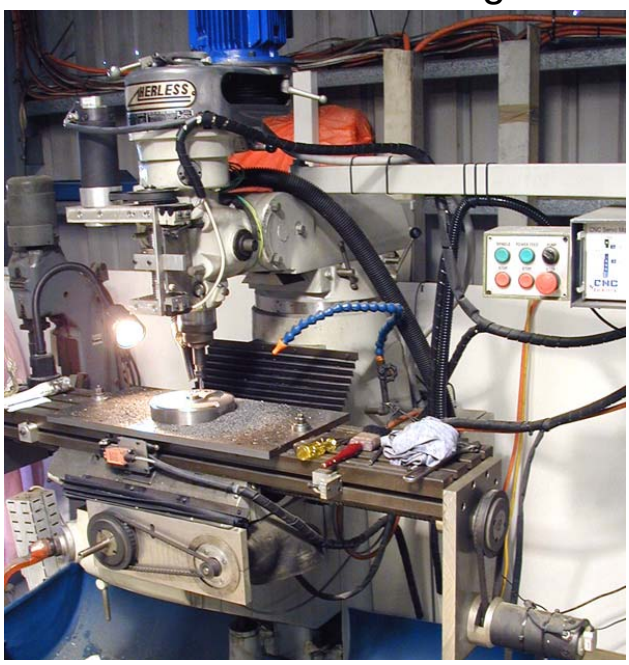




Photos: Milton Smith

Machining Loco Wheels Using CNC

by Jim Clark



Ken Austin has recently converted a restored Herless mill into a 3-axis CNC. As an exercise in CNC machining, and to see just what it's capable of, we decided to fully CNC machine all 12 wheels for Ken's $7^1/_4$" Baldwin loco. The photo above shows the general setup of the machine. Several stages are needed to make a complete wheel.

Above right: The cutter tracing out a complex path for the boss and counterweight.
Below right: Partly machined cast iron blanks. Watch this space! Photos: Jim Clark

$7^1/_4$" Rail Construction Report

by Tony Jones

Not much to report on the 7.25" track for July. We did overturn the turntable to weld on an extension boss to give more bearing area on the pin, as it only just penetrated the 12mm thick plate on the underside.

Some material was obtained from Ken Austin, which I turned up with a dummy pin to locate it while being welded. It was a straight forward job. It was jacked up and returned to its correct position the next working bee.

The ends are being trimmed on the rails to butt up to the feeder rail. Of course, like a lot of other guys I went down with the flu so I lost a weekend. The sheet metal for the shuttering for laying concrete around the perimeter of the 'big donut' went into place, the concrete mixer has been delivered, we have to fit an electric motor to drive it . Anyone have 1 hp motor to spare?

Since then we have all been caught up in excavation of trenches and installing cables and water piping. The tin shed was dismantled and the site has been cleaned up. We can now see the wood from the trees! All positions of the pipes and cables are recorded and have been committed to a reticulation plan.

We now have a good stock of steel to carry us through the next couple of months. It will be stowed in the steaming bay until we get going again on rails.

Coming into August, there have been a few delays in work on the track leading into the turntable. I lost a Tuesday seeing a specialist and the previous Saturday to move my deceased mate's boat. However while I was absent the rest of the team power wire brushed the points and treated them with acid, and they came up surprisingly good.

After some scrounging for an electric motor for the borrowed cement mixer, it was up and running by Tuesday 12 August. When the dump truck was assembled on the track we found the mixer was only suitable for dwarfs, so to make it easy to pour direct from mixer bowl to hopper we had to stand it on concrete blocks with a few bricks as shims. Then we had a trial by pouring concrete around the support posts and it was quite successful. Section 1 was temporarily supported in 3 places by Acrow jacks, which I was able to take out on Wednesday, and set up the remaining posts ready for another pour on the Saturday.

In between times George managed to complete the circular shuttering around the 'donut', and that was our main aim. A load of coarse blue metal and sand was fetched from Soils Ain't Soils in the tandem trailer and backed up to a convenient spot by the mixer. The only other problem was the dwarf labourers; this was overcome by ringing up Marcus my son who is 6' 4" and requesting his help which he was so willing to do.

Just after 8:15am we started the first mix and kept it going for 2 hours. The dump truck proved its worth as we dumped concrete as fast as we could mix it. By 10:00am 'Smoko' we were finished. The trailer was empty. George is still getting over being humped over the trowel. He and John Hudson did a sterling job. I may add that the technique was to send the dump truck down the rail by its own impetus and backed onto the turntable and then front poured by slewing the turntable to the required spot. Pity we didn't film it for posterity.

To finish off Section 2 to connect to the turntable we need to cast concrete blocks in situ to support the rail at regular intervals to stop it wandering sideways but to provide a sliding foot to allow for expansion. A few studs to weld and we are done and we can go back to manufacturing rails. Work is still ongoing with the points drawing, and we will be looking for fabricators to make one or two items at home very soon. We aim to make a batch of 4 for a start, points that is.

Tony Jones

A Glandless Water Gauge

by Bob Tanner

I have never been entirely happy with the standard commercially made right-angle pattern 'scale' water level gauges, particularly where fitted to very small model boilers around the 50mm diameter size. There are several reasons for my caution, bearing in mind that the water gauge is the most important mounting on any steam boiler.

I have noted that with some miniature gauge glass assemblies, in particular gauges made to scale, i.e. having small diameter glass, it is difficult to locate the water level from a distance (even with a diagonally striped indicator fitted behind) – very unsatisfactory. Also, very small bore glasses can be affected by capillary action distorting the true water level – again, unsatisfactory.

Another common problem is if the gauge cocks are over scale, both ends of the glass can be concealed to a greater extent by the nipples, packing and gland nuts, thus restricting the operating range of the gauge.

I have always advocated the fitting of over-scale gauge glass assemblies on small boilers – at least you know where the water level is!

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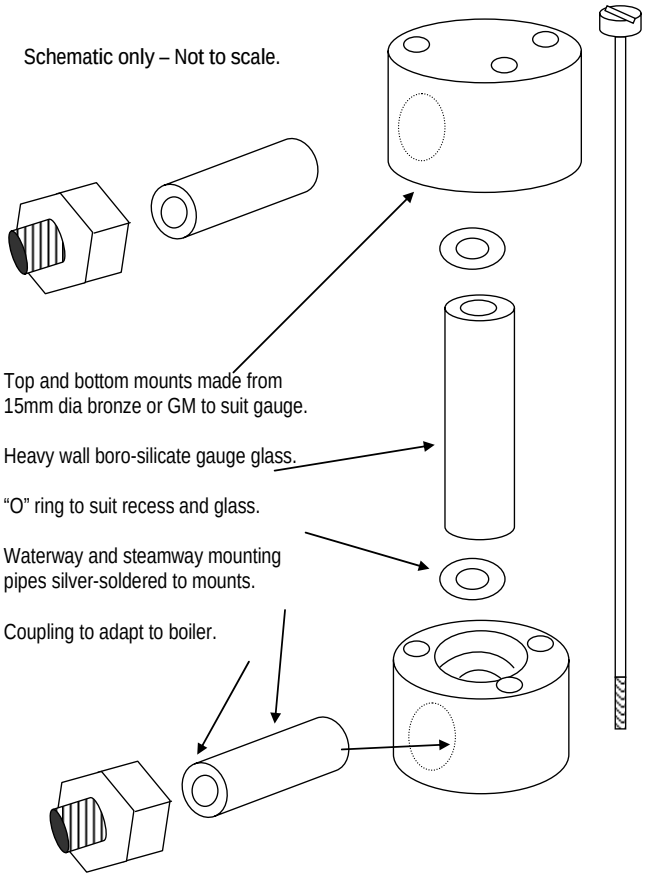
A Glandless Water Gauge (cont...)

by Bob Tanner

With all this in mind, I have been thinking about how to construct a simpler gauge to replace the traditional pattern gauge to fit on a freelance (approx $^{3}/_{4}$" scale) traction engine that I am building. The water level gauge on this boiler is tucked away between the horn plates and below the crankshaft and running motion etc. – and very difficult to observe.



Perusing recently through some UK Model Engineer magazines of 30+ or so years ago (I'm unable to take any credit for the design), I chanced upon an article describing a 'glandless' water gauge – just what I was looking for!

As can be seen in the adjacent sketch, the gauge construction is very simple and ideal for the smaller boiler sizes, and mine was constructed in an afternoon. It has a compact shape, easy installation and fitted with a relatively large diameter and bore glass tube, to give a full view of the water level over just about the full length of the gauge glass. The glass is a neat fit in the recessed mounts and is sealed by 'O'-rings. My particular gauge was machined up using 15mm diameter rod, and the mounts are retained using 8BA screws – which gives an indication of the size of the gauge. The water and steam mounting pipes are copper tube off-cuts, silver-soldered into the mounts. The assembled unit is then attached to the boiler via union connections.

The gauge glass material (boro-silicate) was procured from a local scientific glassware manufacturer near to where I work in Naval Base/Kwinana, and he cut and polished the ends for me -– this was done so that the glass seats neatly on the 'O'-rings.

As can be seen, the gauge is very easy to construct and install, and can be readily modified to suit one's own particular application. The main advantage is that the water level can be more easily seen from a distance, and it also gives a view of the boiler's water level over virtually the full length of the glass. Having said all of the above, a disadvantage would probably be that it is 'not-to-scale' so you wouldn't get any 'Brownie Points' for it on your boiler at a Model Engineer Exhibition! Further, on this example, no 'cocks' are fitted to the steam or water connections, but of course these could be fitted depending on preference.

For me though, the safety of knowing where my water level is at all times is more important than aesthetics. At some time in the future I intend building a larger version for a small model Scotch Marine boiler that I constructed a couple of years ago.

Bob Tanner.