AUCKLAND SOCIETY OF MODEL ENGINEERS INCORPORATED

PETERSON RESERVE, PANMURE, AUCKLAND
PO BOX 14570, PANMURE, AUCKLAND 1741, NEW ZEALAND

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Club House Telephone
(09) 570 5286

Club Web Site
www.asme.org.nz

President
Grant Anderson **(**09) 576 8330
E-mail address president@asme.org.nz

Secretary
David Russell 446 0957
E-mail address info@asme.org.nz

Editor
Hayden Purdy 022 0677 892
Email addresses
editor.asme@gmail.com
editor@asme.org.nz

REGISTERED NEW ZEALAND PUBLICATION

ASME INC.

THE MICROMETER

In This Issue:

A device designed to facet diamonds

Train Roster

Date	Electric	Electric	Steam	Steam	Station	Station	Station	Extra Guard #
1-May-11	D Black	D Booth	**G Anderson**		**J Olsen***	D Hamp	**R Hannah***	
8-May-11	B Cotton	T Crake	**G Bell**		P Haycock	**G Healy***	P Jones	
15-May-11	P Eaton	M Granger	**S Day**	(If B Cert ok)	G Kemp	**J Lankow***	D Leybourne	
22-May-11	J Harrison	M Hollis	**L Farquhar**		M Luxton	I Lyons	**H Martin***	
29-May-11	D Housley	J McManus	**A Gasteen**		S Meikle	G Murray		C Mitchell
5-Jun-11	P Moy	A Murley	**M Jack**		B Parker	**G Quayle***	R Reichardt	
12-Jun-11	G Wills	R Craig	**T Lawrence**		M Richardson	**K Ryan***	B Sanford	
19-Jun-11	T Robinson	J W-Buys	**M Orange**		A Shirley	R Smith	R Stratton	
26-Jun-11	M Plant	P Woodford	**B Piggot**		**R Street***	T Taylor	P Tomkies	

Bold and Underlined name**:**
This is the designated **Train Controller**, i.e. the person in overall control of all operations for the day. If you are the **Train Controller** you should phone around the others rostered for that day to make sure they remember to turn up.

Bold with Asterisked* name :
This is the designated **Stationmaster**, i.e. the person responsible for activities in the station area for the day. The Stationmaster is also responsible to account for the day's takings.
Please Note, there is no expiry period or date on train ride tickets previously sold.

Please Note:
You will notice from the above roster that new members to the club have been rostered on as the Extra Guard. The committee has decided to do this so that the new member has a chance to learn the ropes at the station without being under undue pressure. Please note on your rostered day you should arrive by 12.45pm to get prepared for the days running.

Club Calendar

ASME Events	
3rd May	General Meeting, Talk by Christopher Ratcliffe on Submarine Design
7th May	Working Bee, Painting of Balcony at Clubrooms
10th May	Committee Meeting
17th May	Workshop Night, at Murray Lanes home workshop
21st May	Club Fun Running Afternoon from 1pm
7th June	General Meeting, Talk by John Olsen on his Fathers experiences working on the Railway
14th June	Committee Meeting
21st June	Workshop Night, at the clubrooms
16th July	Mid Winter Christmas Luncheon, catered lunch $20 per person Please contact the Treasurer to pre order tickets
General Events	
5th – 9th Jan 2012	International Convention, Whangarei

Presidents Report

May 2011

You will have received a separate mail out in March with a Track & Trolley Report and Questionnaire aimed at surveying and collecting the views of all members on the future of our miniature railway. About 35 questionnaires have been returned at this time, but we need all members to make an effort and return their questionnaire so individual views are identified. Please return questionnaires to our Secretary, David Russell, no later than the next general meeting date, 3 May. There are no right or wrong views, so don't be shy – have your say as to what you think about the facility.

Thanks again to Pete Woodford for hosting several more workshop nights at his home in March, with the assistance of Mike Jack. These were well attended and the series has been most beneficial to members. There are plans for a further series later in the year.

The model engineering fraternity has lost two stalwarts over the last few weeks. Harold Sinclair passed away on Friday 8th April and Colin Burleigh on Monday 11th April. While neither were members of ASME, many of our members would be aware of the influence and input these two gents have had to the hobby over the years. Harold was a prolific builder of large scale narrow gauge engines, initially in 5 inch gauge and then, in 7 ¼ gauge. He was an attendee at a number of ASME's Easter open weekends of the past and there is a photo in our clubrooms of Harold driving one of his engines across the original ASME girder bridge. Colin was well known in his role as President of MEANZ and for the immense amount of detailed effort he put into getting a workable scheme agreed with DOL to enable MEANZ club miniature railways to comply with the ADR requirements – we await the final adoption of these guidelines by Parliament. Both of these model engineers will be remembered with much respect within the fraternity.

Another working bee has been called for Saturday 7th May (9am start). Please come along and help make a start on painting the upstairs verandah area of the Clubrooms and for more pre-winter track clean-up work. Thanks to all those who came along last month (Timothy Robinson, Tony Lawrence, John Lankow, Trevor Taylor, Reg Reichardt) and to Mike Banks who water blasted the upstairs area ready for painting and for removing the stump by the engine shed. You may recognize these names from other recent working bees – can you be added to the list of helpers for May's working bee?

Our next afternoon locomotive run will be held from 1pm on May 21st – another chance for all those who wish to have a run without the pressure of hauling the public around. Also a chance for others to come and watch or maybe to have a drive – great for the motivation to get your loco finished and/or back on the track!

Graeme Quayle has kindly consented to ASME brochures being made available on his stand at Model X at Queen's Birthday weekend this year and will also make room for some small models, preferable a locomotive, stationary engine or traction engine, rather than machinery items. Room may also be available for a larger locomotive on its own stand. If you can help with any suitable items, please contact Graeme in the first instance. This is an opportunity to further our hobby at what has become a very large and well patronized show.

A suggestion was made from the floor at the last general meeting that we should email the Micrometer out to all members for whom we have email addresses and only post hard copies by specific request. This is the reverse to what we have been doing to date. The committee considered this suggestion (which most at the April meeting seemed to agree with by a show of hands), however the committee believes this change would be a bit abrupt for many members and that we should work to show members the benefits of the email only option, more gradually. As a result, we intend to email copies of the Micrometer to all members with email over the next few months, as well as post a hard copy (other than to those who have requested email only). Also we will provide the link to the file copy on the club's web-site. We trust this will more gently introduce the prospect of receiving future newsletters by email only and help members identify any problems they may have with the email only option (e.g. download by dial-up!) and to see the benefits (e.g. all photos in colour). One of the biggest costs ASME has, is that of sending paper copies of the newsletters out to members and it is also another job for the Tuesday Club to fold the pages and post.

The committee has decided to subsidise the mid-year winter luncheon on Saturday 16th July so that the cost to members for a two course meal and some refreshments will be only $20 per head. Tickets are available from Graeme Murray and must be pre booked and paid for by 9th July so that we can make a commitment for your meal with the caterer. Mark the date in your diary now, buy a ticket and come along for a great social occasion.

Thanks to Bob Fosberry who has recently donated a number of railway videos to the ASME library. Are you making good and regular use of this valuable club resource? The library is open every general meeting night, just select a book and/or Video/DVD and have the details recorded by Alan Gasteen or Tony Lawrence. Then you will have the selected items available to read/watch until the next meeting.

A laminated set of guidelines for duties of all running staff on Sunday roster have been completed and are attached to the trolley. Please take time to review the general overview and the specifics for your task when you are next on duty. Thanks to Pete Woodford for getting this job completed and to Roger Van Ryn for his earlier work.

Please remember to return your Track & Trolley Questionnaire by 3 May,

Grant Anderson

19 April 2011

Around the Clubs

May 2011

Mailship , Auckland , March 2011.

Great cover picture and story of the Queen Mary. How not to launch a trailer boat. Visit to Turtle Lake, Hamilton.

Wheels and Floats , Tauranga , March/April 2011.

Successful working bee on the embankment with some photos of the new trackwork. Also some thoughts on securing machinery in case of earthquakes. Sad to note the Rotorua Club has had to remove it's track from the present site. The story of Bullied`s Leader Class Loco and a page of funnies.

Expansion Link , Hamilton , March.

Visit to Mana Ariki went well. New bridge in place for the Open Weekend on the 19th and 20th March.

Northern Views , Whangarei , March and April 2011.

Photos of the Anniversary Weekend including one of a visitor from the UK. He was Martin Sams from the Lancaster and Morecambe ME Soc who drove one of Dave's locos. New rack and pinion steam locos being built in India for the Nilgiri Mountain Railway. Reminder about the Convention next February. Also a visit from the Mayor. Details of the changes to the track to make running smoother Articles on the new signal system to be used in Auckland and a photo of the Hayabasa,Japan1s new fast train. Two other articles cover the sugar cane railways in Australia and the new carriages for the Transalpine. Also a very neat set of pipe benders complete in a neat box.

The Keirunga Park Platform . Havelock North , Autumn 2011.

The cover photo is of the Whangarei Club's new loco lifting gear, a very substantial piece of engineering. Other photos show the Whangarei track in action over the Open weekend. The story of growing up with trains by Alicia Kennedy. On the 12th Feb a new Club was formed to be known as the Mana Ariki Railway Club. Great write up of a visit to India and the Dargeeling Railway. Photos of several more miniature machines.

Blast Pipe , Hutt Valley and Maidstone , March and April 2011.

Lots of Club news at home and of visits to other tracks, including Alan Spinks private railway and the Kapati Open Weekend. Photos of two projects, one a very nice Rainhill chassis and a computer controlled router. Visit from John Snell who was the manager of the Romney, Hythe and Dymchurch Railway at one time. Details of some LED lights available to use as loco headlights. Visit to Mana Ariki Marae track. Reminder about the Thames SGR Open Weekend May 14th to 15th .The Manukau Live Steamers Open Weekend on June 4th to 6th and the Whakatane EBOP Open Weekend July 23rd and 24th.

Con Rod , Otago , March 2011.

Club news from all the sections with their events being well patronised. Club looking at building new

trolleys with 2014 in mind. A lot of good photos and an article on making piston rings without heat. Note that the Club's 75th celebrations are coming up very quickly.

Model Torque , Napier , March 2011.

The Club to hold their 50th Anniversary next Feb. Mounting Insurance cost. Write up on the Romney, Hyde and Dymchurch Railway. Repairs to the Maid of Kent progressing

Slipstream , Auckland Model Aero Club , March and April 2011.

All sorts of model planes on show at Aka Aka together with a selection of Aero engines built by Alan Roberts. A lot of good photos of members and models, a good read

Blowdown , Kapati , Autumn 2011.

The Open weekend a great success. some good funnies and photos of their track. Some thoughts on why so many Parsons are train fans.

Alan E

Bits & Pieces

General Meeting, 5th of April 2011

Hosted by Ray Brown, reported by Roger van Ryn

A Solid casting for a Myford tailstock designed and built by Murray. South Auckland Foundry in Papakura, will look at one-offs as at this time. **Photo A**

Murray Lanes Lorch Lathe is for sale, contact Murray for details. It has all the fittings you need to begin watch making. Murray is making a dividing plate for the Lorch Lathe. http://www.lathes.co.uk/lorchschmidt/ **Photo B & Q**

Murray also described the intricacies of refurbishing an old DTI, which had the "zinc (poo metal) grows over time" syndrome, jamming it. **Photo C**

Ron Copeland brought in the 2 Stroke model engine as you can see it has an electric spark plug, the coil and points are in the boss behind the propeller location, Ron's had it for about 55 years. **Photo D**

Another out board motor (electric this time) is also one of Ron's, about 55yrs old. **Photo D**

An interesting electric motor of indeterminable parentage is also one of Ron's.
Photo E

Ron Copeland has also opened a couple of electric tooth brushes.... the “thrown away technology” inside one of these is quite amazing, electronics and mechanical! **Photo F**

Dave Housley brought in the con-rods, steam chests and Brass slide valves for his Lima Mogul. All solid stuff, well made! **Photos G & H**

Dave Housley also made an holder for one of those $2.00 torches of serious brightness.... they are good value for the number of white LED’s you get, I've got 4 of these torches in series, lighting up my fish tank on 12v. **Photo J**

Mike Jack brought in an “OOPS” which has or will happen to us all. You've just finished the job in the lathe and are parting it off, but instead of just falling neatly into the swarf like all the others have done, this one defies gravity and logic, and gains impetus from a chuck jaw and hooks itself up in the tool post or somewhere.... usually when you have no more material to make another one. **Photo I**

Mike Jack also brought in a couple of cams etc with gears cut by Ross Reichardt. Part of a student project, they want to make another “Worlds fastest Indian” **Photo K**

A BIG clamp thing turned out to be the tensile testing machines upper jaws from Peter Woodford’s work. Pete explained how the jaws self tighten under load, and described the forces involved when testing samples of different plastics and steels. **Photo L**

This evenings “What the heck is it?” were some things that looked like broaches or something.... no one could tell Graeme Healy. **Photo M**

Chris Ratcliffe has a nice gas fired Yarrow type boiler as a shop test boiler, from Bruce Engineering. Rumor has it Hugh Martins making one about the same size. **Photo N**

Alan Pritchard's been having fun making a lever/sliding type fire hole door for his GWR Firefly. Looks good, made and designed entirely by Hand CAD. **Photo O**

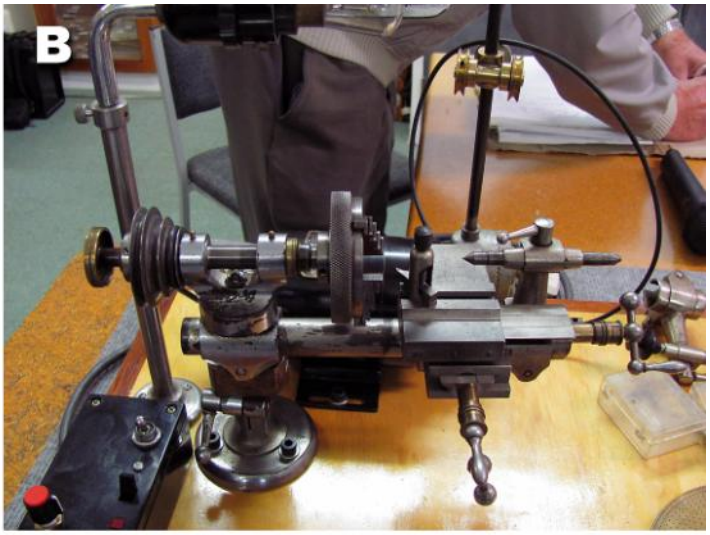
Along with all sort of other projects Greg Burrows is making an o-6-o Ozzie Bagnal in Garden Gauge, “electric?” “Not likely!”. **Photo P**

A visiting father and son team showed Rubens HO gauge loco and some trucks, good on you, keep interested!

Hugh Martin was the speaker for the evening, showing a fairly complete set of photos on the building of his “Prairie”. The pictures reminded me of seeing the bits taking shape over the years, and now they are all together in the form of a fine working engine. A lot of the members related, I'm sure, to the hard work and rewards along the way.

Rog.


A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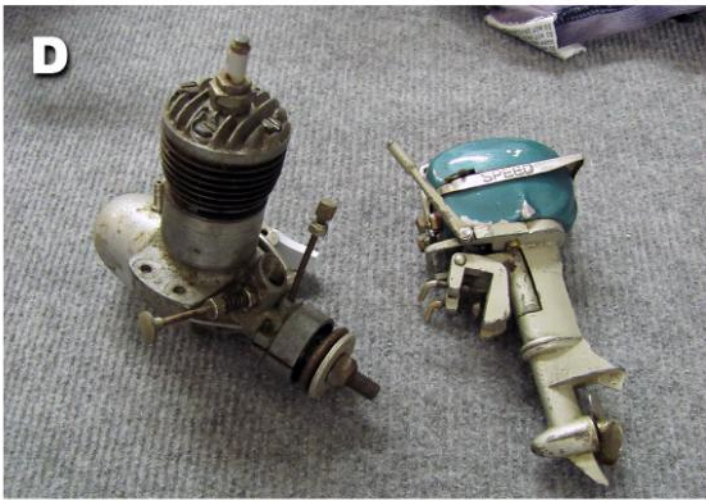
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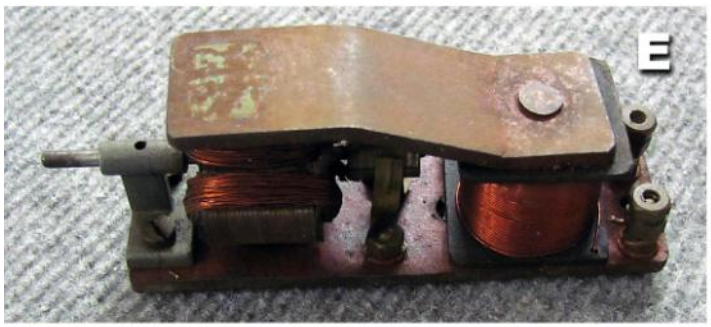
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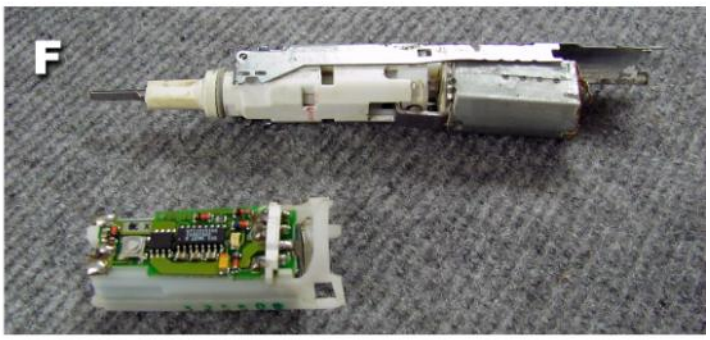
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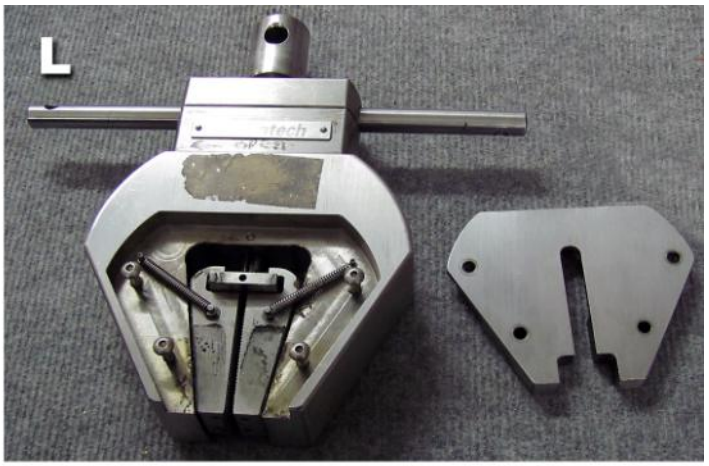
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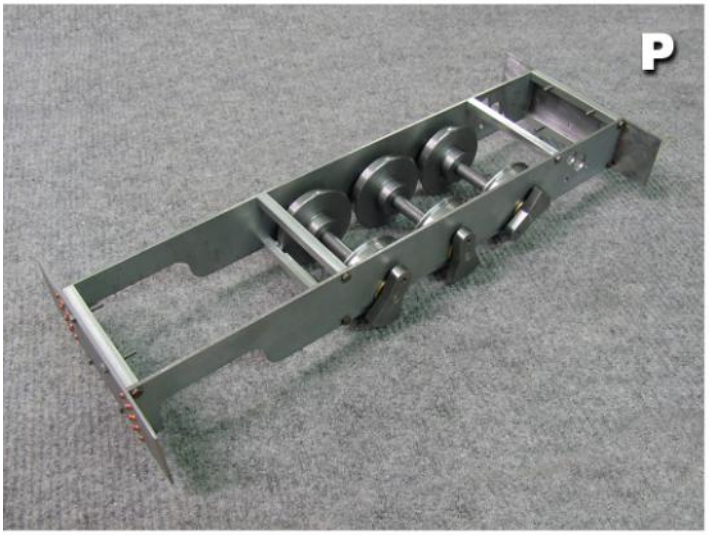
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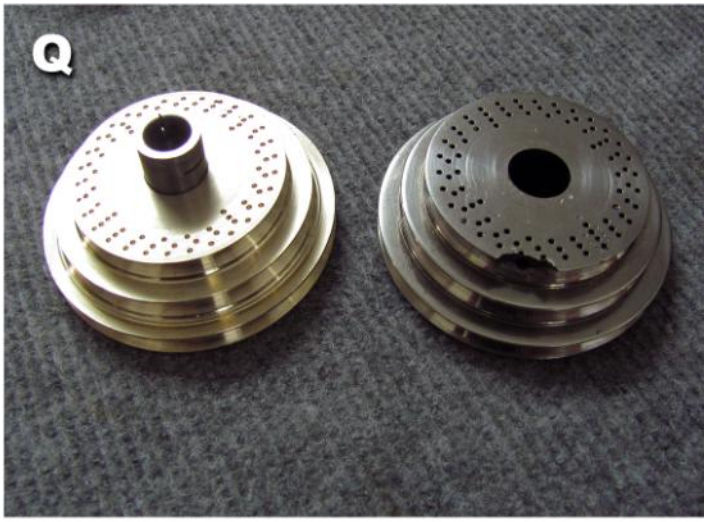
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High Speed Steel

High speed steel a subset of tool steels, usually used in tool bits and cutting tools. It is often used in power saw blades and drill bits. It is superior to the older high carbon steel tools used extensively through the 1940s in that it can withstand higher temperatures without losing its temper (hardness). This property allows HSS to cut faster than high carbon steel, hence the name high speed steel. At room temperature, in their generally recommended heat treatment, HSS grades generally display high hardness (above HRC60) and a high abrasion resistance (generally linked to tungsten content often used in HSS) compared to common carbon and tool steels.

Although development of modern high speed steel began in the second half of the 19th century, there is documented evidence of similar grades of steel produced earlier. These include hardened steels in China in 13th century BC, wootz steel, manufactured in India around 350 BC and production of Damascus and Japanese layered steel blades in years 540 AD and 900 AD.

Following the discovery of crucible steel in 1740, in 1868 the English metallurgist Robert Forester Mushet developed Mushet steel, considered to be the forerunner of modern high speed steels. It consisted of 2% C, 2.5% Mn, and 7% W. The major advantage of this steel was that it hardened when air cooled from a temperature at which most steels had to be quenched for hardening. Over the next 30 years the most important change was the substitution of chromium for manganese.

In 1899 and 1900, Frederick Winslow Taylor and Maunsel White, working with a team of assistants at the Bethlehem Steel Company at Bethlehem, Pennsylvania, USA, performed a series of experiments with the heat treating of existing high-quality tool steels, such as Mushet steel; heating them to much higher temperatures than were typically considered desirable in the industry. Their experiments were characterized by a scientific empiricism in that many different combinations were made and tested, with no regard for conventional wisdom or alchemic recipes, and with detailed records kept of each batch. The end result was a heat treatment process that transformed existing alloys into a new kind of steel that could retain its hardness at higher temperatures, allowing much higher speeds, feeds, and depths of cut when machining.

The Taylor-White process was patented and created a revolution in the machining industries, in fact necessitating whole new, heavier machine tool designs so the new steel could be used to its full advantage. The patent was hotly contested and eventually nullified.

The first alloy that was formally classified as high speed steel is known by the AISI designation T1, which was introduced in 1910. It was patented by Crucible Steel Co. at the beginning of the 20th century.

Although molybdenum rich high speed steels such as AISI M1 have been used since the 1930s, shortages and hence high costs of raw materials during World War II spurred the development of alloy designs with molybdenum being substituted for tungsten to produce cheaper steel. The developments in molybdenum -based high speed steel during this period made them on par with and in certain cases better than tungsten-based high speed steels. This started with the use of M2 steel (sulphurised version of M1) instead of T1 steel.

The main use of high speed steels continues to be in the manufacture of various cutting tools: drills, taps, milling cutters, tool bits, gear cutters, saw blades, etc., although usage for punches and dies is increasing.

High speed steels also found a market in fine hand tools where their relatively good toughness at high hardness, coupled with high abrasion resistance and fine, made them suitable for low speed applications requiring a durable keen (sharp) edge, such as files, chisels, hand plane blades, and high quality kitchen and pocket knives.

High speed steels belong to the Fe-C-X multi-component alloy system where X represents chromium, tungsten, molybdenum, vanadium, or cobalt. Generally, the X component is present in excess of 7%, along with more than 0.60% carbon. (However, their alloying element percentages do not alone bestow the hardness-retaining properties; they also require appropriate high-temperature heat treatment in order to become true HSS.)

In the unified numbering system (UNS), tungsten-type grades (e.g. T1, T15) are assigned numbers in the T120xx series, while molybdenum (e.g. M2, M48) and intermediate types are T113xx. ASTM standards recognize 7 tungsten types and 17 molybdenum types.

The addition of about 10% of tungsten and molybdenum in total maximises efficiently the hardness and toughness of high speed steels and maintains these properties at the high temperatures generated when cutting metals.

To increase the life of high speed steel, tools are sometimes coated. One such coating is TiN (titanium nitride). Most coatings generally increase a tool's hardness and/or lubricity. A coating allows the cutting edge of a tool to cleanly pass through the material without having the material gall (stick) to it. The coating also helps to decrease the temperature associated with the cutting process and increase the life of the tool.

Latest in Engineering

Extracts from The Model Engineer and Electrician of May 4, 1911.

Five Mallet locomotives, each weighing 461,000 lbs., which is said to be 51,000 lbs. heavier than any locomotive now in service, have just been shipped to the Baltimore and Ohio from the Schenectady works of the American Locomotive Company (says the *Engineer*). The tender weighs 181,000 lbs., loaded, making the combined weight of the engines and tender 642,000 lbs. The new locomotives will be used on the mountain division of the line.

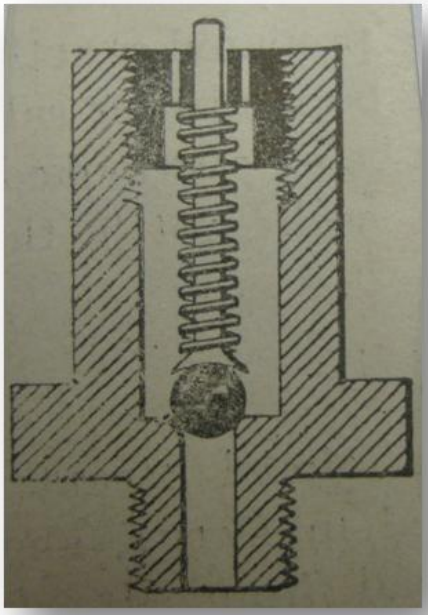
Queries and Replies:-

W. N. (Wakefield) writes: I have purchased a gas engine, stated to be 1½ h.-p. (second hand), my intentions being to drive a circular saw, 12 ins. or 15 ins., to cut wood about 1 in. by 1½ ins. Should the engine drive it? If not, please tell me the required h.-p. I have had much difficulty in getting the engine to work, and having a limited knowledge of gas engines, I should be glad of this information. What size should gas-bag be?

One and a half horse-power would be rather little for the work you propose doing, high speed being an essential for this work. As high speed always absorbs a fairly large amount of power, we should recommend at least 2½ to 3 h.-p. for the job. No doubt, by suitable gearing, and by running the engine at a high speed, and feeding the work through not too quickly, you would cut satisfactorily all your stuff up to about 1½ ins. The gas-bag for such an engine is usually about 10 ins. to 12 ins. diameter, but with

regard to this much depends upon the supply available.

A New Safety Valve

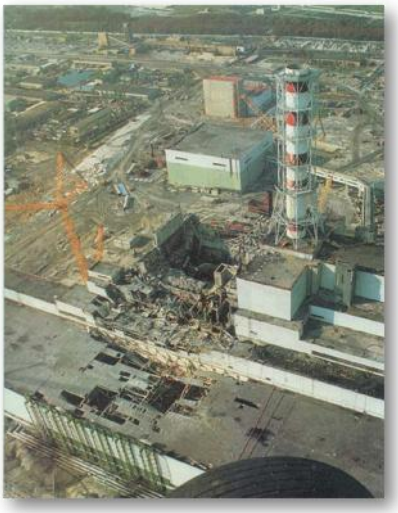


The accompanying illustration shows a new form of model safety valve in which it will be seen that the valve itself is formed by a ball, kept on its seat by a cap and spring. The ball is of non-corrodable metal, and the pressure at which the valve blows off can be adjusted by the screw cap. The design of this valve is very neat, and we should imagine it will become very popular for model locomotive and stationary boilers. It is made in several sizes and may be had from Messrs. Bassett-Lowke Ltd., Northampton, or the Liverpool Castings & Tool Supply Co., Liverpool, from each of which firms we have received a sample valve for inspection.

Brian Cotton

Radiation

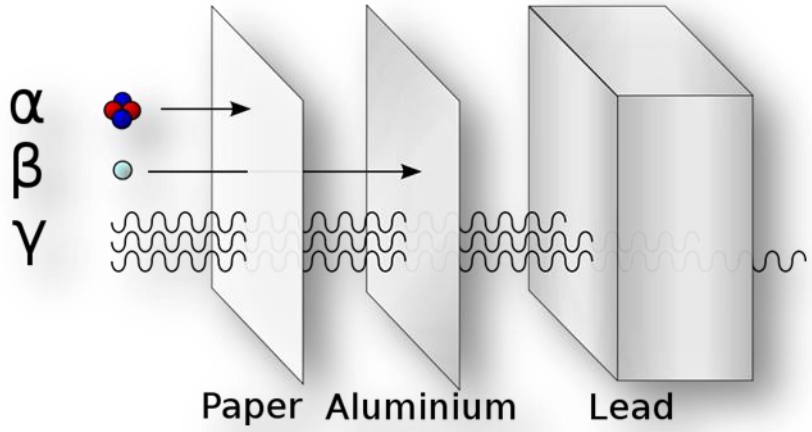
All this talk of radio active fall out around Japan and likening it to Chernobyl at a "7" made me wonder about it. This is a short version on the types of rays and measuring them.



What is it and how much is bad? Apparently it depends on what sort it is, or what sort of stuff the reactors were fueled with , and what has been spewed into the atmosphere, making what sort of products.

Alpha, Beta, Gamma, X-rays, being the ones we, or Japanese citizens are most likely to encounter from nuclear power station accidents fall-out. According to military thinking, nuclear weapons leave no radioactive particles as they are all burned up, like Hiroshima and Nagasaki. Yeah Right.

The big baddies are the ones that directly "Ionise" (read "fry") material around them and cause direct damage. These are the powerful ones, Alpha (Symbol looks like a fish) and Beta are the heaviest particles which come from sources such as Plutonium and (Plutonium was in one of the reactors) Uranium, which are far up (heaviest) the Periodic Table.



These two types of rays are measured in Grays or Rads. One Gray in fundamental units is 1Joule of energy per Kg of absorbed dose. If a kg part of your body absorbs one Joule of Alpha or Beta rays, immediate tissue damage will result.

(A pulse Milliseconds long of about 100 Joules is used to kick start ones heart by a defibrillator.)

If you are exposed to X-Rays or Gamma rays (Symbol like a Y) you measure them in Sieverts.

1 Sievert is the amount of “X” or “Y” rays that will cause the same tissue damage as one Gray of “A” or “B” rays. These X or Gamma rays don't Ionise directly, but make products which will ionise and cause damage. These are considered along with Electromagnetic waves.

A lethal dose is 4.5 Sieverts given in a “short time”.

Radiation level per hour outside the Fukushima Daiichi Nuclear Power Station in Japan on 22 March 2011 (11 days after the reactors were damaged) was 0.3 Sievert.

This means if you hung about for 13 hours, that would do the job. This material will be around for Millenia, pity those who lived and worked there.

In short, Ionising radiation is dangerous in direct exposure, but the level in Rads (Gray/100) is debatable, and politicians/ scientists change the damage levels depending whether they are pursuing or defending an issue.

For more comparative levels see

http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/R/Radiation.html

Non-ionising radiation is thought to be harmless below the levels that cause heating. If they don't cause direct (measurable) heating of the tissue, the authorities say it's harmless, again, depending on their vested interests.

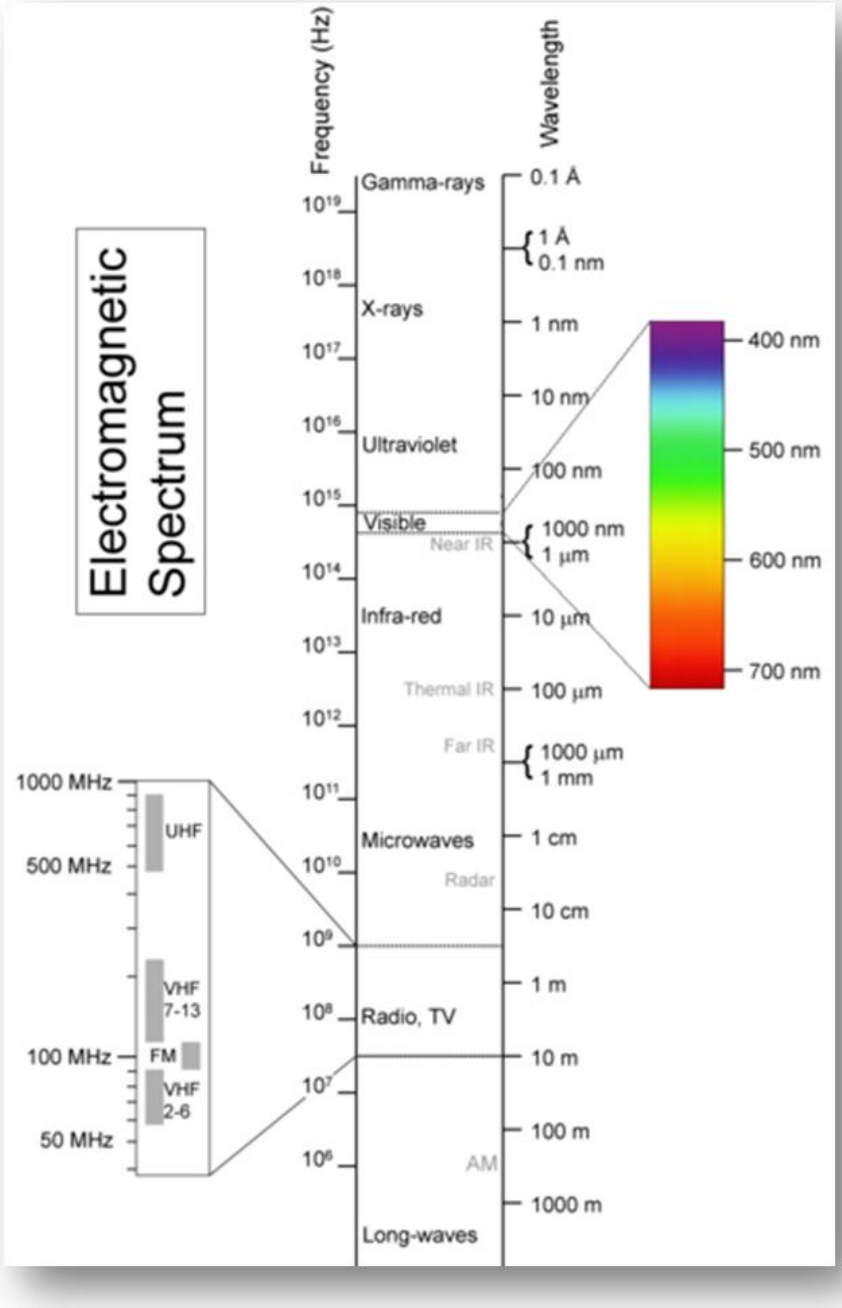
Not often discussed is the long "human term" damage, or longer term environmental damage, as the “down winders” in Nevada have found. Its difficult ($$$) for those afflicted to prove. Radio Active fall-out

is accumulative in the environment because of it's (thousands of years) half-life, and dangerous in human terms because of our relatively short (total) life. Yes, these are mostly naturally occurring elements, but the concentrations are not natural.

Electromagnetic Radiation from cell phones radio waves, or high tension transmission lines while not causing heating could be affecting electron spin or pairing and making free radicals in our bodies..... but, hey, that's another story.

(More red wine anti-oxidant!)

Rog.



Mills Replica Takes to the Air

Most of you have probably seen my replica Mills 1.3cc diesel model aircraft engines on display, and at the club night, but this was only half of the goal that I had set myself. What I wanted was to see it actually fly a model - proving that it wasn't just a mantelpiece ornament.

The original engine dates back to the 1950's, so it needed to go onto a suitable airframe of the same vintage. After some investigative work I found an article in an old magazine, and a A5 sized plan of a suitable aircraft. It was a bit of a mission, but I scaled the plan up and constructed the aircraft in about 3 weeks. Although the original aircraft was for free flight, I converted it to radio control so I could get my engine back! A couple of weekends ago we had perfect weather, so off we went to the flying field. The question in my mind was 'would the plane fly?' and 'would the engine power it?' I can report that the first flight went better than I ever expected - the engine ran beautifully, and the plane also flew straight off the building board - as they say. Since then the aircraft has made many more flights, including my youngest sons' first ever solo radio control aircraft flight. With that success under the belt I can now move on to bigger and better creations!

Ross Purdy

Classifieds

For Sale

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Workshop machinery for sale

Grey Myford Super 7 lathe in very good condition with standard Myford attachments including 3 and 4 jaw chucks face plate, driving dog. Fixed centers, rot centre, several driving centers, rear tool post, spare change wheels and quadrant, wood turning rest, tool holders, and drill chuck. $3000.

Emco FB-2 6 speed geared head mill in very good condition with 2MT spindle nose on makers stand. Clarkson auto chuck and collets, Emco machine vice. 4 inch dividing head with tailstock. Emco angle plate. $2500.

Old grinder with drawer of assorted buffs. $40.

6 mm Boley lathe with collets. $650.

A 6 mm Lorch jewelers lathe mounted on a board with electronic speed control and two tailstocks.

There is AC motor drive which can drive the lathe or milling head via countershaft.

Comes with compound slides, vertical slide, graver rest, and milling head and a direct indexing plate, 54 to 360 and 38-300 divisions.

There is a 3 jaw chuck, 31 standard collets, 6 special collets, 2 shellac collets, 5 external collets. plus box of other lathe fittings. $1300.

Contact Murray Lane, Ph 534 8396

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Be Identified with Club Apparel

ASME dress shirts one available size large, long sleeve for $59.00. Others available by order only.
Club embroidered 60mm dia. sew on badges. Ideal for your driving overalls at $10.00 .

Contact Hugh Martin, Ph 536 4544