The South African Institute of Marine Engineers and Naval Architects

SAIMENA

The Two Oceans Journal

Edition 22017

National Council 2017/2018

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Durban Branch Chairman

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Iain Armstrong and Org Nieuwoudt

22017 Edition

www.saimena.co.za

Presidents report

Welcome to everyone.

It has been an honour and a privilege to be President of SAIMENA. I was an engineering cadet back in 1978 when I started attending meetings and looked up to the people that were running SAIMENA. I decided then that I wanted to be a member and I never thought that I would be appointed President one day.

SAIMENA has done lot for marine engineers in South Africa through ECSA ie in getting our qualifications recognized in the industry and ensuring our standards are maintained.

The branches in Durban and Cape town have always had strong committees and have ensured that the technical papers are topical and on most occasions more technical than sales. The social side has always been strong especially with the regular lunches, dinner dances and sporting events.

It has become evident in the last few years that there has been a steady decrease in numbers attending technical papers and the social events although some still remain very popular ie Annual dinner Dance.

Over the last 2 years SAIMENA has lost a number of it's members through retirements and people moving overseas, through death and general apathy. We have managed to get a number of new members but steadily our numbers are declining. We have looked at a number of ways to improve the situation but just increasing numbers does not mean people attend. We have found recently that it takes a personal phone call or e-mail to the various organizations in order to get a commitment to attend.

SAIMENA house Durban has been in limbo for the last few years since the announcement that we have to move due to development. WE will get no compensation for the house but have an in principal /verbal agreement with the management of Berea Rovers that we will get use of the new facility when it is built at no cost to us but will not have a permanent room as we have now. This will further reduce our revenue as we used to get income from renting out our room.

WE will have to decide what we do with all the items inside the room as Berea Rovers do not want us to place any of it in the new facility. To date there has been no further info on when we will have to vacate the premises but it does not seem to be anytime soon.

I would like to thank Ivan Parsons for his dedicated service to SAIMENA over the many years and especially his time as Treasurer. He has managed to ensure that we remain with a healthy bank balance and that we always meet our tax obligations.

I encourage some of the younger members or members that have not always got too involved to go on committee and ensure we as a professional society grow and serve our industry needs.

I would like to see our female numbers increase and also our black engineers to be encouraged to participate and become President one day.

I thank you for your loyal support over the years during my tenure as Chairman and as President from 2014/2015. Due to the work load of our President Dave Fiddler, he kindly requested that I step in for 1 year during 2017 after which the Cape Town Branch will take Over.

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Louis Gontier

Presidents Report Period March 2016 to March 2017

My tenure for this period as SAIMENA President was a result of a natural progression of institute members noting that the honorary position required the senior membership status of FELLOW.

Two Fellows who have served SAIMENA with dedication were recommended for Honorary Fellow, Messrs Deyzel and Armstrong.
Council approved this recommendation.

SAIMENA Durban and Cape Town have been fortunate in that there were a number of professionals involved in the Marine Sector who are willing to present papers on a number of subjects to the members, this in 2016. We are always grateful for these papers and for the input to SAIMENA for our continuing professional development.

We do see a drop in the number of members attending our meetings for various reasons. It should be remembered that the branch committee and council do make every effort to make the meetings interesting and always attempt to find speakers that have interesting products of a marine nature.

Our membership continues to grow with new members joining from various marine sectors both at Associate and Member grades from the SA navy and merchant marine. SAIMENA created a student grade which needs to be nurtured and progressed, the constitution still requires a change for this grade to be accepted.

I have had very little contact or association with ECSA and there are a number of senior members in our institute that have not registered so this precludes them from acting as president of SAIMENA.

A number of members have resigned from SAIMENA stating that as they are retired or no longer have any association with the SAIMENA there is no further interest in the body. Of course a number of our members have emigrated or returned to their countries of birth.
A number of our members have passed away and our condolences always go out to members families.

On my progression to the President one of my projects was to delve into the education of seafarers and in particular the engineer officer qualification levels both on fishing vessels and merchant ships.

It is important to note that the fishing and merchant fleets categorise marine engineer officers on propulsion power and if the certificate of competency has a power rating of greater than 3000 KW, the sky is the limit for a senior position on large propulsion powered craft. In some cases the auxiliary power on a vessel greatly exceeds the propulsive power but this is not taken into account.

The natural progression of seniority in the S A navy is unknown to me however, the navy craft mostly have sophisticated high powered machinery which will require suitably qualified engineers to operate the equipment.

Returning to the education of engineering mariners lower limits have been imposed by the STCW convention which became necessary as traditional fleets disappeared and management companies sought cheaper and less sophisticated crews. The ongoing breakdowns and casualties required IMO to implement ISM and STCW protocols [amongst others].

The SA Navy has numerous courses for operation of machinery and auxiliaries together with levels of education applicable to ensure that their operating staff has the required level of competence. The constitution of SAIMENA has taken everyone into account for grading and membership status.

I found that there are numerous schools that teach various subjects to marine hopefuls in a number of centres.

IDo we have the candidates to support all these centres of education? We certainly do not have the ships sailing under the SA Flag.
There appears to be a large failure rate of candidates at certain levels of certification application that come before the Maritime Authority examiners and I worry that the maritime authority and the education centres are not talking to each other regarding the requirements for the various certificates of competency. I am of the view that both the examining authorities and the education centres have the candidate's interest at heart but I do believe that the problem need to be sorted to bring down the failure rate of our future marine engineers.

It is accepted that the current financial squeeze affects schools, the navy, fishing and merchant fleets and that employees would like to reduce the levels of required competence even further. This must be resisted.

We have various bodies and organisations said to be looking after our interests and that includes SAIMENA, SOMMSA, government gazetted IPSAM and SAMPA, the NI and the IIMS, the latter two being organisations based in the UK.

I am not sure if any of these bodies are talking to each other and I was certainly not contacted during my tenure and likewise I made no contact with anyone.
Unfortunately my professional duties for my firm resulted in little or no time for SAIMENA which is why I have to stand down a year early. I wish the council every success for the future. The constitution needs to be revisited for a number of the clauses and it may be a good idea to call for meetings with regards all the various maritime bodies that are trying to claim their right to a dwindling source of mariners.

It is a cause that in my opinion requires a full time commitment.

I am grateful to the all council members for their assistance and especially to Rear Admiral Kevin Watson who keeps us up to date on member status and Ivan Parsons who maintained our books always in a positive balance.

My thanks also to Willem Deyzel who keeps our new member applications on the straight and narrow and correctly completed.
Footnotes
IPSAM is a State approved governing body for professional mariners in South Africa established in terms of National Qualifications Framework Act. It gained formal government recognition and approval following to formalization of its establishment two years ago facilitated by the promulgation of the Merchant Shipping (Safe Manning, Training and Certification) Regulations 2013 that year.
According to the SA Maritime Safety Authority (SAMSA) which houses and administers the new professional body, IPSAM's coming into existence is yet another critical step forward in the country's current campaign to rejuvenate, grow and develop the country's maritime economic sector and facilitate its integration into the main economy.
Marine Notice 21 of 2015

NI : www.nautinst.org/ [Nautical Institute]
IIMS : see https://www.iims.org.uk/
International Institute of Marine Surveyors
SAMPA : https://www.facebook.com/South-African-Maritime-Professionals-Association-10224
SAMPA is also advertised on the SOMMSA website as is the Nautical Institute
SOMMSA : mastermarinersa.co.za

Dave Fiddler

Cape Town Branch Report

Post my appointment as chairman in March this year we have the following events to report

1. In April the Appointment of the new Cape Town branch committee.
2. On the 25th May as the new committee we held our first monthly meeting and technical presentation by Konsberg. The topic being custody transfer systems onboard LNG carriers.
3. 30th May Dirk Janse van Rensburg and I attended the SA maritime roadmap implementation workshop held at the CSIR campus in Rosebank.

Cape Branch Committee 2017—2018

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Member	JACQUES OLWAGE	JO@6S.CO.ZA	Tel: 021 447 1226,

Graham Dreyden—Cape Town Branch Chairman

DURBAN BRANCH REPORT

2017 seems to be passing rapidly.

The year has been difficult as regards presenting papers so far. There are a number of events planned starting in June. Unfortunately, the only meetings held so far have been the National and Branch AGMs. However, a program of presentations should commence soon.

The construction at Berea Rovers has not commenced as previously advised. However, newspaper reports are that the stable tenants will soon be evicted – time will tell how this progresses. At the moment the soccer academy appears to be operating out of prefab buildings.

There is news that a new passenger terminal will be built at A/B berths in Durban. The 3 water sport clubs (Ski Boat, Durban Underwater and Point Yacht Clubs) at Vetchies Pier have apparently been served eviction notice for the construction of the extension and completion of the beach promenade.

On the social side, the one luncheon has been held at Royal Durban Golf Club. This was relatively well attended, but it was noticed few individual members attended – most were at sponsored company tables.

Arrangements are being made for the annual Dinner / Dance to be held at the Durban Country Club on Saturday 4th November 2017 – please diarize and support this prestigious event.

The annual SAIMENA Golf Day has been booked for Friday 10th November 2017. Henry Hugo will finalize arrangements and advise members accordingly.

Rogan Troon – Durban Branch Chairman

Ladies Scarves and Mens Ties

SAIMENA REGALIA FOR LADIES AND NEW MEMBERS

At a recent meeting of the SAIMENA Cape Branch the first of the new scarves now part of the SAIMENA regalia were handed over to two of our active lady members.

Johanna Mars, William Christian, Emina Usher-Dzinic

Scarves will be handed over to current lady members at forth coming meetings and will also be made available to Durban Branch lady members.
Gentlemen will receive ties as they always have done.

(the offer of scarves was made to our male members but the ladies said no ways.)

Pulverized Coal and its use as a fuel

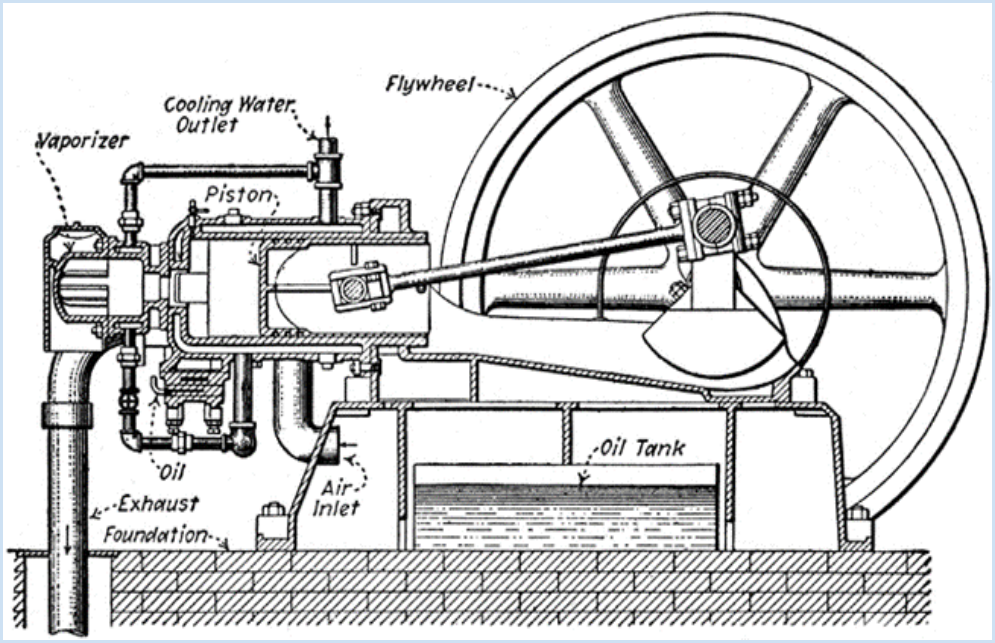
We are all aware of Rudolf Diesel and the diesel engine associated with that name, but did you know that his early engines used coal dust, otherwise known as pulverized coal, as the fuel.

The coal dust was forced into the cylinder by compressed air and heat by compression did the rest. The first engine using coal dust was built in 1892

Unfortunately, he had a problem as this type of engine tended to blow up and had a serious problem with "severe knocking" not to mention the abrasive effect on the cylinder and a serious problem with particulate emission.

There is an opinion however that the diesel engine as built by Diesel, was actually an improved development of the " hot bulb" engine. Which was originally invented and patented by Stuart and Hornsby. This engine worked by heating the air and fuel in a separate chamber prior to being forced into the cylinder.

Hot Bulb Engine



As petroleum and many other gas and liquid sources of fuel were known at this time, one wonders why coal dust was popular as a possible fuel in these early experiments.

As an example, Diesel demonstrated a diesel engine run on peanut oil at the Paris world fair in 1900.

The answer as to why use coal dust is very simple and is also a reason, to be explained later, why experimentation in pulverized coal fired engines is ongoing.

Coal, as now, is plentiful, much more so than oil and our early pioneers looked at this plentiful supply as a cheap and easily obtainable fuel.

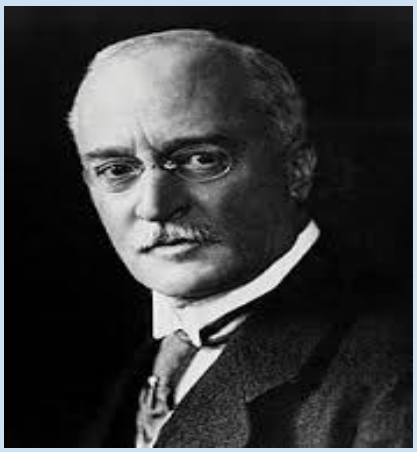
Coal heaps and mines were all over Europe and America and many of those mines still exist although now closed down for environmental reasons.

As Diesel was experimenting with his engine there was also a gent by the name of Rudolf Pavlikowski who also built an engine but unlike Diesel who used compressed air to get the coal dust into the cylinder, Pavlikowski used a special chamber to force the fuel into the cylinder by partial combustion of

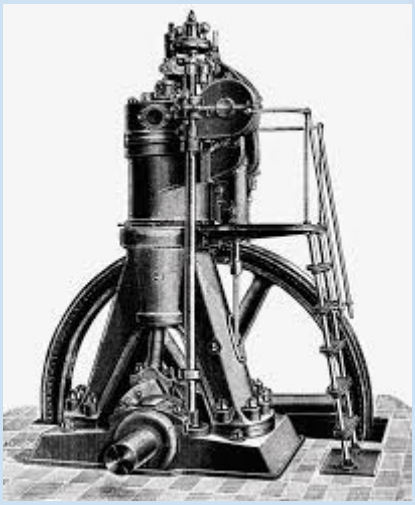
the air/dust mixture resulting in a pressure rise which not only prepared the fuel for injection, but also dried and degassed the dust.

When it was realized that a liquid fuel was much more beneficial than coal dust the emphasis changed and the use of pulverized coal for engines disappeared.

RUDOLF DIESEL



There are no pictures of Diesel's or any other coal dust fired engine except the "hot bulb", so the best I can give is a picture of a later model using a liquid fuel.



Early Diesel Engine using liquid fuel

Development of pulverized coal as a fuel did not develop very much during the rest of the 18th and most of the 20th century as it was realized that oil is much more efficient as a fuel and could be easily pressurized for injection into the cylinder, however the high cost of oil from the 1970's caused a relook at the use of coal dust for internal combustion engines although the use of coal dust was developed as a fuel for blast furnaces is well known.

We will now look at the development of coal dust slurry and the more scientific approach to the use of pulverized coal.

Another little known fact is that when Diesel was working on his engine he was employed by a company called *Maschinenfabrik Augsburg-Nürnberg* more commonly now known as MAN and a manufacturer of many types of engines including Marine Diesels.

One area of investigation is the coal dust slurry.

This slurry is pulverized coal mixed with water or another liquid to produce a slurry of which the coal dust should be no more than 20 microns and be 30 to 40% by weight to give an allowable viscosity.

This mixture would be acceptable for a two stroke, slow speed diesel engine which of course brings us to the Marine diesel and it would not surprise me at all if MAN and possibly others such as Sulzer are conducting research into such an engine with an eye to the future. especially in the US.

Such a process can be described as introducing into a valveless diesel engine operable at speeds from 80 to 150 revolutions per minute, a liquid fuel slurry consisting of a mixture of water and 20 to 50 percent by weight of coal in the form of particles having a maximum size not in excess of 20 microns and introducing into the engine a combustible fluid in an amount of up to 10 percent by weight of said fuel slurry supplied to aid in ignition of the fuel slurry; mixing the fuel slurry and combustible fluid with compressed air in the engine at conditions of pressure and temperature such that the coal in the slurry burns to form combustion products and the water in said fuel slurry vaporizes to form steam; and extracting work from the combustion products and said steam to generate power.

That description is talking about a marine engine if ever I heard one and if the price of oil goes up again to plus $100 a barrel, I feel sure that the major marine engine manufacturers will look more earnestly at the pulverized coal and water slurry fuel once the problem of things like particulate removal are solved.

Operation and performance of the above-described system employing a selected coal-water slurry may be understood from a description of the thermodynamic processes which occur, with particular emphasis on those in the diesel engine .

One fuel slurry for the engine consists of 40 percent by weight of coal (idealized as pure carbon) and 60 percent by weight of water i.e., equal mole fractions of carbon and water.
The basic combustion reaction of this fuel slurry when introduced into and mixed with compressed air in the diesel engine is as follows:

$$C.H_2O + O_2 \rightarrow CO_2 + H_2O$$

By way of comparison, a typical liquid petroleum fuel combustion reaction is:

$$CH_2 + 3/2O_2 \rightarrow CO_2 + H_2O$$

It is apparent from these reactions that the products of combustion of a 40 weight percent coal (carbon), 60 weight percent water slurry are similar to those of a liquid petroleum fuel. In particular, as the many moles of water produced during combustion of a liquid petroleum fuel as are present in the combustion of this embodiment of the fuel slurry.

The Americans evaluated a pulverized coal fired boiler on the merchant vessel "Mercer" in the 1920's and found that it was economic and produced 90% of power that an oil fired boiler did. Pulverised coal is in common use for power generation and blast furnaces as well as other applications even today.

So the future may bring either or both steam turbine and diesel engines for ships propulsive power or even a combination of the two.

Acknowledgements Iain Armstrong

The Voicepipe

May I first thank Robert Young for pointing out an error in the last edition of the TOJ in that Safmarine did not have Liberty ships in their fleet. The editors were misinformed and, according to Robert, Safmarine had Victory ships which were steam turbine powered. .Apologies to all and thanks to Robert for pointing out the error of our ways.

SAIMENA had its AGM in March this year at Durban, and it was proposed according to the agenda, that the grade of honorary fellow be open to other grades as well as fellows. This could involve a domino effect to the constitution in its main clauses as well as the by laws. It is not known at this time if this proposal was adopted.

Another agenda item was the proposal to create the grade of Marine Partner Member which is basically admitting companies into the institute as members. There were reportedly objections raised concerning advertising and if such a grade would also be allowed as a national council member, and if so, would it be allowed a vote at national council Also should a Marine Partner member be allowed to serve on branch councils and would it be entitled to a vote there as well. It is not known at this time if this proposal was adopted.

Another agenda item reportedly raised was a constitution amendment to clarify the difference between membership reinstatement and readmission. The editor is not sure how the proposal will be formulated into the constitution, or how the existing various clauses and bylaws relative to this proposal will be affected should this proposal be adopted. It is not known at this time if this proposal was adopted.

No doubt many other items of discussion were raised but as neither editor could attend the AGM, they could not be reported on

It is with sorrow that I have to report the passing away of Mike Truter. Mike born in 1929, was a child of the Aberdeen Region of the Karoo , and after completing a trade as a fitter/turner, went to sea with Union Castle as a Junior Engineer,

Mike obtained his Combined Chief Engineers Certificate of Competency and continued with Union Caste until1966.

Mike also worked on the harbour tugs and lectured at CPUT at which I am sure many of our members will remember him. Besides being a long serving member of SAIMENA Mike was also a Fellow of the London Institute of Marine Engineers.

Mike passed away peacefully at the grand old age of 87 Our condolences go to his family

The Editor

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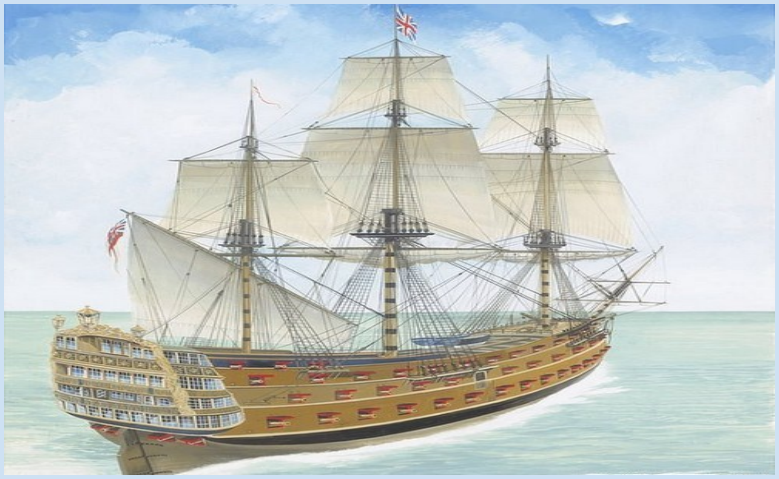
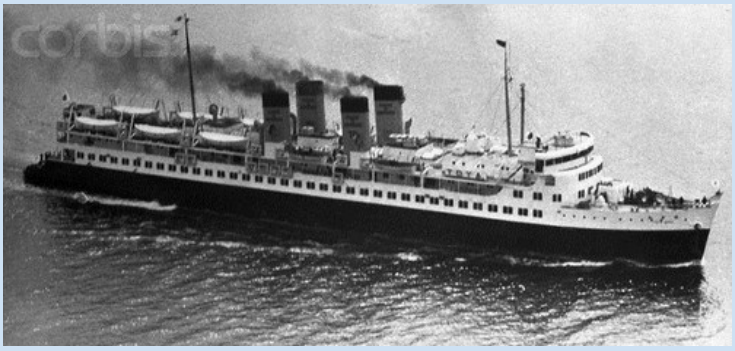
SHIP DISASTERS

On 3rd February, Al Salam Boccaccio 98, an Egyptian passenger ferry sunk in the Red Sea en route from Dubai, Saudi Arabia, to Safaga in southern Egypt. This is one of the biggest maritime disasters of the 21st century. It saw the death of 1020 out of its 1400 passengers, including pilgrims returning from the Hajj in Mecca. The reason behind its sinking is thought to be a fire that started in the ship's engine room.



On the night of 4th October, 1744, HMS Victory, a first-rate ship of the line of the Royal Navy, was caught in a storm in the English Channel when it was returning to England. It ultimately resulted in the ship sinking with the death of everyone aboard, which was 1150 sailors.

Chinese passenger steamship Kiangya sank in the mouth of the Huangpu River 50 miles (80 km) south of Shanghai on 4 December 1948. It led to the death of 2,750–3,920 people. There were only 700–1,000 survivors, who were picked up by other vessels. The reason for its sinking was an explosion that took place when the ship hit a mine left behind by the Imperial Japanese Navy in World War II.



Japanese passenger ferry Toa Maru was caught between a typhoon in the Tsugaru Strait between the Japanese islands of Hokkaidō and Honshūon on September 26, 1954, which ultimately resulted in its sinking. Due to many people getting on the ship at the last minute and many cancelling their journey, the exact number of deaths is still unknown. However, it is thought that an estimated 1153 people died from the accident.

Three-masted Chinese ocean-going junk, Tek Sing met its terrible fate on February 6, 1822, when it sank in an area of the South China Sea known as the Belvidere Shoals. It sank when tried a shortcut through the Gaspar Strait between Belitung and Bangka Islands and grounded on a reef. It resulted in the death of 1600 people. Due to its great loss of number of lives, therefore this ship has been referred to as the "Titanic of the East".

One of the biggest maritime disasters in recent times took place on 26th September,2002 when the Senegalese government-owned ferry Le Joola capsized off the coast of the Gambia. The ship was carrying way more than the number of passengers it was supposed to carry. (536). At the time of the incident it was carrying 1,927 passengers, more than thrice the number it was supposed to have. Consequently, due to loss of stability the ship capsized, resulting in the death of 1,863 people.

News Snippets

A 3 blade propeller has following characteristics, The manufacturing cost is lower than other types,they are normally made up of aluminium alloy. They gives a good high speed performance, The acceleration is better than other types.

A 4 blade propeller has following characteristics: The manufacturing cost is higher than 3 blade propellers, and is normally made up of stainless steel alloys which has better strength and durability plus gives a good low speed handling and performance with better holding power in rough seas. A 4 blade propeller provides a better fuel economy than all the other types.

A 5 blade propeller has the following characteristics: Manufacturing cost is higherst of all Vibration is minimal from all the other types, 5 blade propellers have better holding power in rough seas.

Fuel cell propulsion systems use hydrogen as the main fuel component. Electricity is created in the fuel cell without any combustion whatsoever. The process is clean and therefore has been regarded as a very important alternative marine propulsion system. There are various types of propulsion under the fuel cell propulsion head like PEM (Photon-Exchange-Membrane) and the molten-carbonate systems.

Boiler refractory material should have sufficient mechanical strength and be able to withstand various forces like, weight of adjacent brickwork, vibration action, cutting & abrasive action of frame, flue dust, high temperature, sudden changes of temperature, load at service conditions, and Chemical and abrasive action of operational phases. The material (pure compounds) which are used to make refractory have high melting point in range of 1800° to 2800 ° C.

In order to calculate the resistance of a ship, the first step is to conduct a towing tank test. Which is preferred in the case of new hull forms. However, if the hull form of the ship in design has already been tested in a tank, it is preferred to just follow the scaling method

The function of a fin stabilizer (also known as the bilge keel),, found at the bottom part of the ship's hull, is to provide resistance to the excess rolling of ship in either direction.

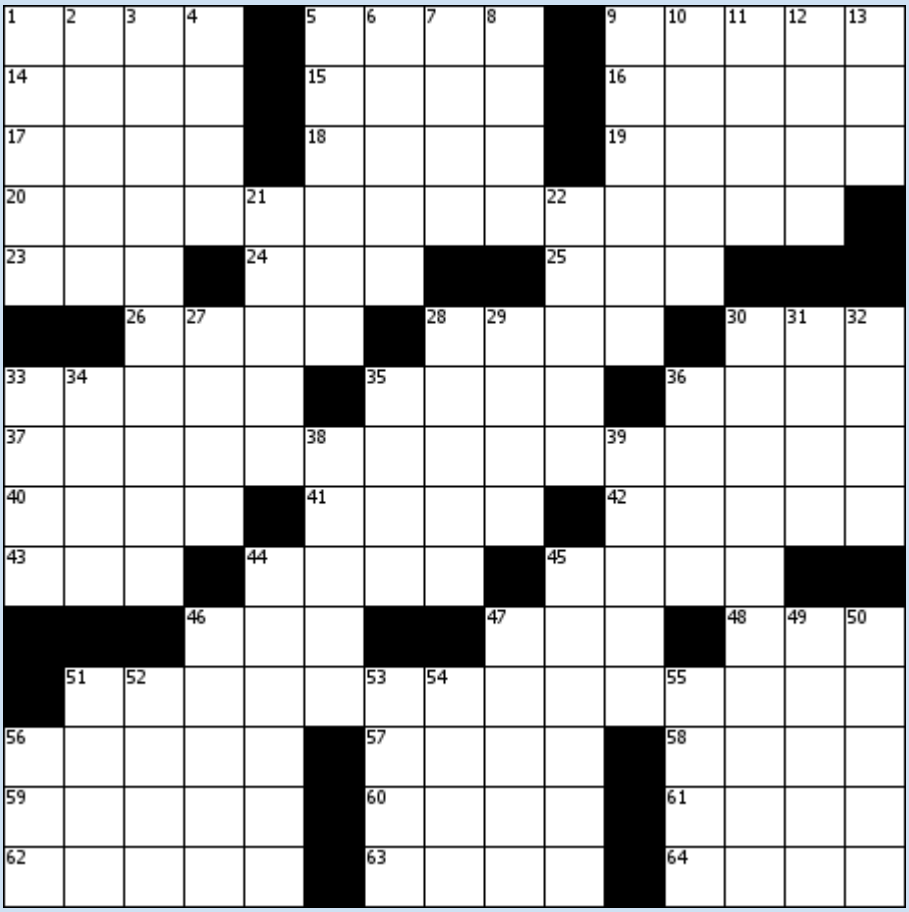
Compressor Capacity is Low.

This is one of the most common problems seen on all types of ships. Often, compressor capacity can go low or reduced if it is running for a long time and eventually it is unable to cope up with the air demand. Main reasons for this problem are:

Leakage in discharge and suction valves.
Fault or leakage in the unloader.
Leakage from the relief valve.
Increase in bumping clearance.
Wrong setting of compressor auto cut-in and cut-out (too close)

The Editor

TOJ Crossword



Across

- **1**. Warsaw or Munich, e.g.
- **5**. He walked "the line"
- **9**. Coffee machine setting
- **14**. Jai tail?
- **15**. Vocal range
- **16**. "J.W. Coop" milieu
- **17**. Handy bag
- **18**. Diamond fault
- **19**. Lace end
- **20**. Polite act
- **23**. Canaanite's ancestor
- **24**. Sci-fi gun
- **25**. Net judge's call
- **26**. "My thoughts exactly!"
- **28**. Marian, for one
- **30**. Blubber
- **33**. Brave legend
- **35**. Split hairs
- **36**. Stuffing herb
- **37**. Polite act
- **40**. Where you may find yourself on thin ice
- **41**. Woodstock's Guthrie
- **42**. Holography tool
- **43**. What some pitches are
- **44**. Native Canadian
- **45**. Oscar winner Sorvino
- **46**. Sofa problem
- **47**. "Tamerlane" poet
- **48**. Tie up the phone
- **51**. Polite act
- **56**. Dull
- **57**. Rightfully deserve
- **58**. Collier's way in
- **59**. Fill with optimism
- **60**. Did an impression
- **61**. Heckled
- **62**. Barkin in "This Boy's Life"
- **63**. Warren Beatty flick
- **64**. Many moons

Down

- **1**. Garden area
- **2**. See ya in Hawaii
- **3**. Dual-hulled boats
- **4**. Ballpark level
- **5**. Loose tunic
- **6**. Ease, as anxieties
- **7**. Wild guess
- **8**. Plaintive cry
- **9**. Assigned scores
- **10**. Man of many words
- **11**. Out of work
- **12**. Difficulty, so to speak
- **13**. Morse bit
- **21**. Pierre and Marie's daughter
- **22**. High-nosed ones
- **27**. Lampoon
- **28**. "Pretty Baby" director
- **29**. Where to see Puppis and Cari-
- **30**. Dachshund, slangily
- **31**. Brutish boss
- **32**. Oktoberfest order
- **33**. City on the Jumna
- **34**. Rainless
- **35**. Unadulterated
- **36**. Luminary
- 38 Henry Well's partner
- 39 More cunning
- **44**. City on the Delaware River
- **45**. Pitchers stand on them
- **46**. Strike forcefully
- **47**. Studied carefully (with "over")
- **49**. "All kidding ___ ..."
- **50**. Bunches of bits?
- **51**. Vociferation
- **52**. Iridescent gemstone
- **53**. A stone's throw away
- **54**. Spit relative
- **55**. Storied plantation?
- 56 Churchills sign

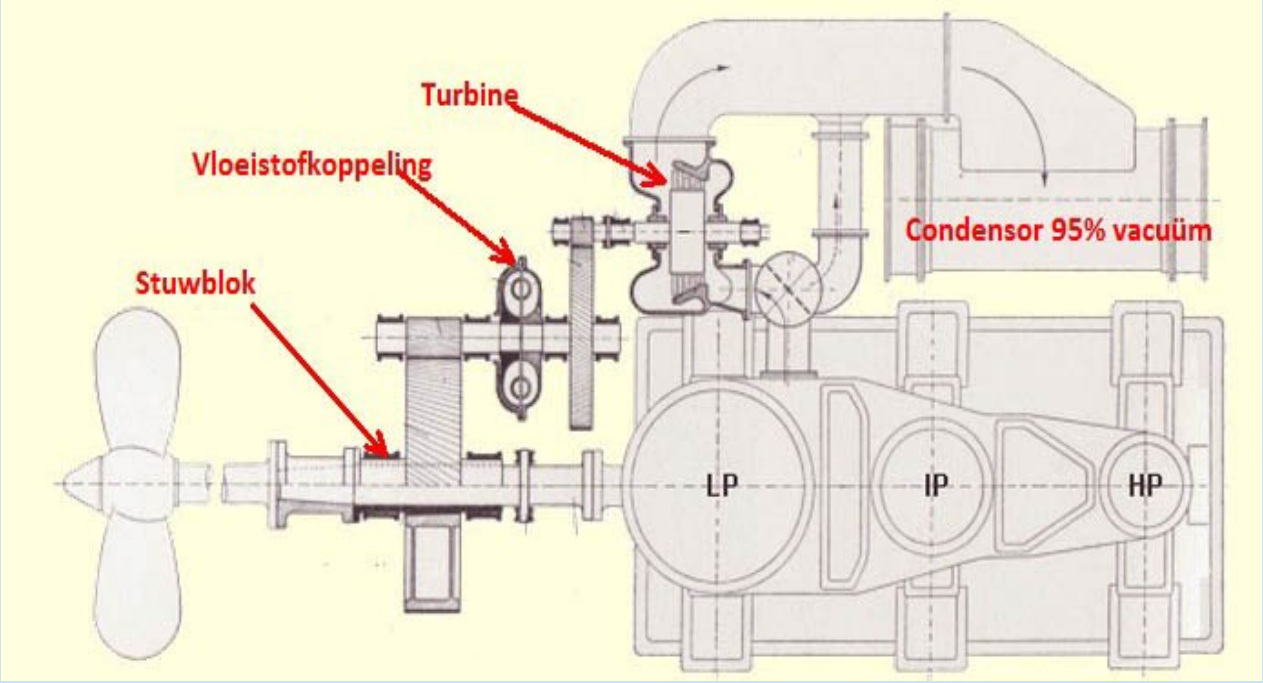
Marine Propulsion Developments of the Last Century

As our children and grandkids upgrade our phones and gadgets every couple of years or earlier, we cannot fail to recognise the exponential rate of introduction of new technologies of all sorts that frustrates and almost overwhelms us.

However, we are mindful that the process already started with the Industrial Revolution and was super-charged by the harnessing of electricity, discovery of oil and many allied inventions and developments since. The process will continue. One way tickets to Mars are already being purchased.

During the first half of the last century our grandparents and parents were also not doing too badly in devising ways to make more for less, to go further faster, to make new discoveries, and to make life more convenient and safer. Variously hampered and energised by intervening world wars and economic depression, this nevertheless was a highly productive and fascinating period in the realm of marine engineering and ship propulsion in particular.

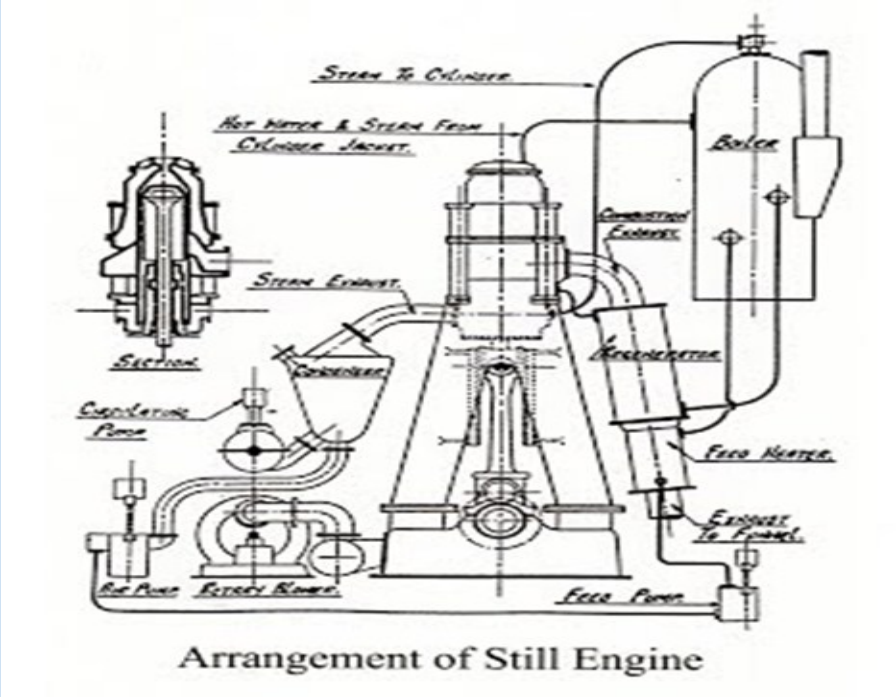
By then the well-established simple and reliable steam reciprocating engines – "up-and-downers" – also gave more for less well into the second half of the century by triple- and even quadruple-compounding, reheat, and the addition of exhaust steam turbines. Every one of the nearly 3,000 emergency-built Liberty-, Park- and Fort-type ships of WW2 were equipped with simple triple-expansion engines. Locally, African Coasters had three ex-Ellerman Wilson steamers (sister ships BULWARK, RIDGE and VERGE) which had a Bauer-Wach exhaust turbine geared to the shaft via hydraulic coupling which took exhaust steam from the engine's LP cylinder and exhausted direct to the condenser. I was privileged as a schoolboy Cadet to have sailed on one of those ships. Not only did this arrangement significantly improve fuel economy, but the engine ran more smoothly once the turbine was clutched-in after "full-away" was rung on the telegraph.



Bauer-Wach LP exhaust turbine installation

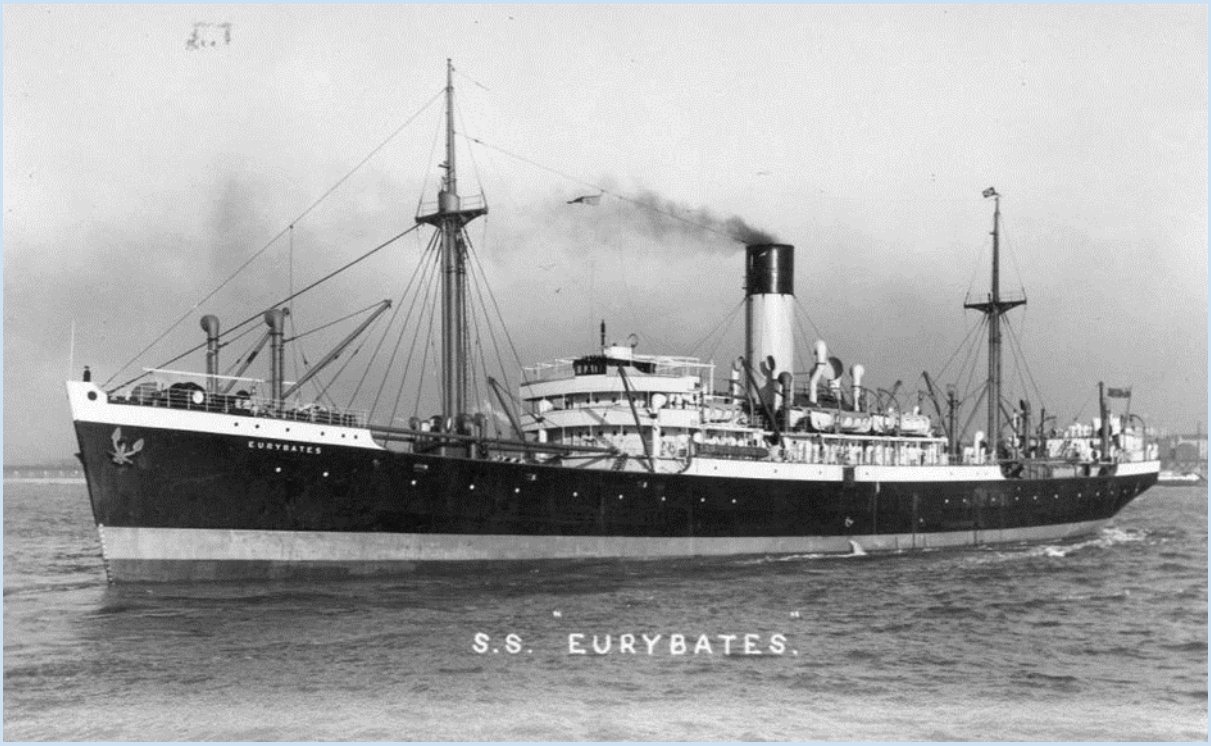
Charles Parson's steam turbine – marketed to the world by his TURBINIA gate-crashing at 34 knots at Queen Victoria's posh Diamond Jubilee naval review at Spithead in 1897 – developed into an efficient and reliable high-speed, high-power, multi-stage, geared unit employed widely in naval craft (all nuclear-powered ships and power stations are steam-turbine driven) and in some LNG tankers which use boil-off gas as boiler fuel. Frank Whittle's jet engine invention was a logical extension of the steam turbine, and so too is the gas turbine.

ioneered by Danish East Asiatic's cargo-passenger SELANDIA (with her sisters, a frequent caller at the Cape), the diesel propulsion engine joined the party in 1912 and quickly became the belle of the ball and eventually hi-jacked the whole show. Thanks to steady advancements in metallurgy and in production machining capabilities, the diesel's inherent superior specific fuel consumption and operating economics spurred progress and competition among the many emerging diesel engine makers. The British Blue Funnel line pulled-out all the stops in its quest for fuel economy by specifying its 1923 newbuilding DOLIUS with a Scott-Still combined diesel and steam propulsion engine. On the pistons' down-strokes it operated as a diesel, but on the up-strokes steam was admitted on the underside of the pistons, the steam being produced by an exhaust waste heat boiler utilizing engine jacket water as feed. This engine was thus working as a double-acting machine.



Arrangement of Still Engine

Blue Funnel's later and larger vessel of 1928, the twin-screw EURYBATES, was fitted with two four-cylinder diesels each with a non-compounded two-cylinder steam engine coupled to the fore end of the diesel crankshaft.



Steam was again produced by diesel exhaust gas boiler. On both ships starting of the diesel was by turning the engine over using the steam facility. The specific fuel consumption rates on these engines was impressive for the day, but their complexity was a headache, as was keeping cylinder oil out of the boiler feed-water, and condensate out of the engine lube oil. The ships were hard work for their engine room staff, but such was the spirit of innovation and inventiveness and quest for more for less.

Times were tough and competition among ship-owners, shipyards and the many diesel engine designers and builders as intense. Recall the fleets of tramps powered by the so-called "economy Doxford" during the depressed 1930's.

Development, simplification and refinement of the diesel were rapid. Specific fuel consumption declined steadily while reliability improved and power output rose. Complicated four-stroke, double-acting, pump-scavenged designs gave way to less complex two-stroke double-acting types and eventually simpler two-stroke single acting turbo-charged arrangement became the norm and remains so today.

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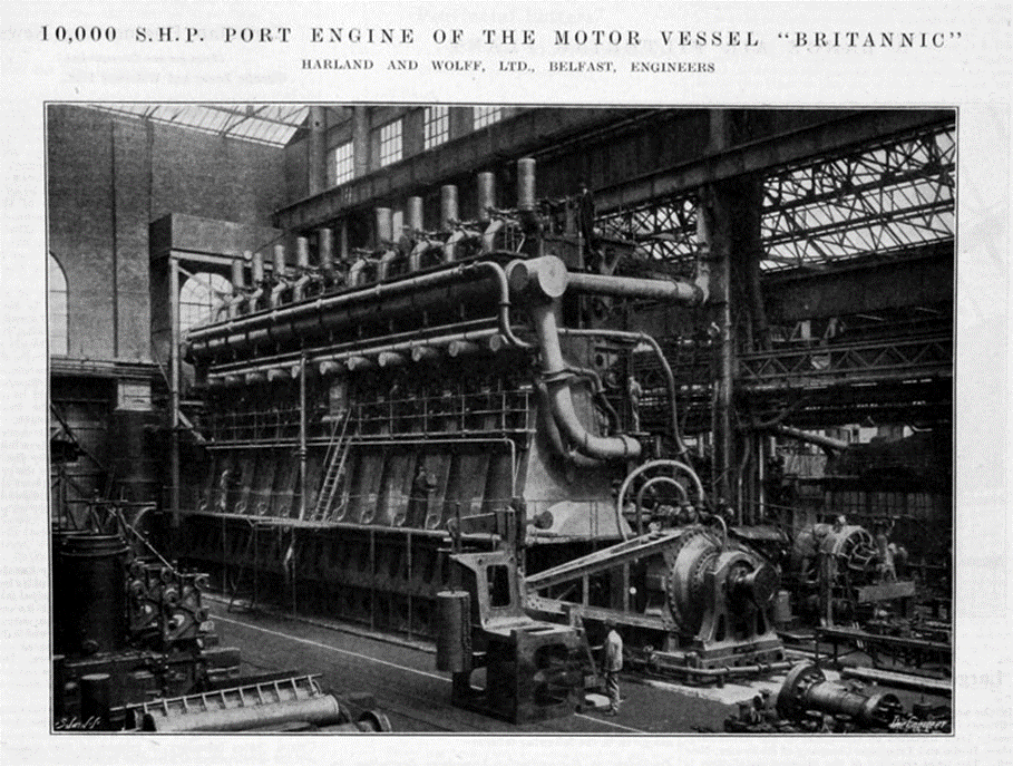


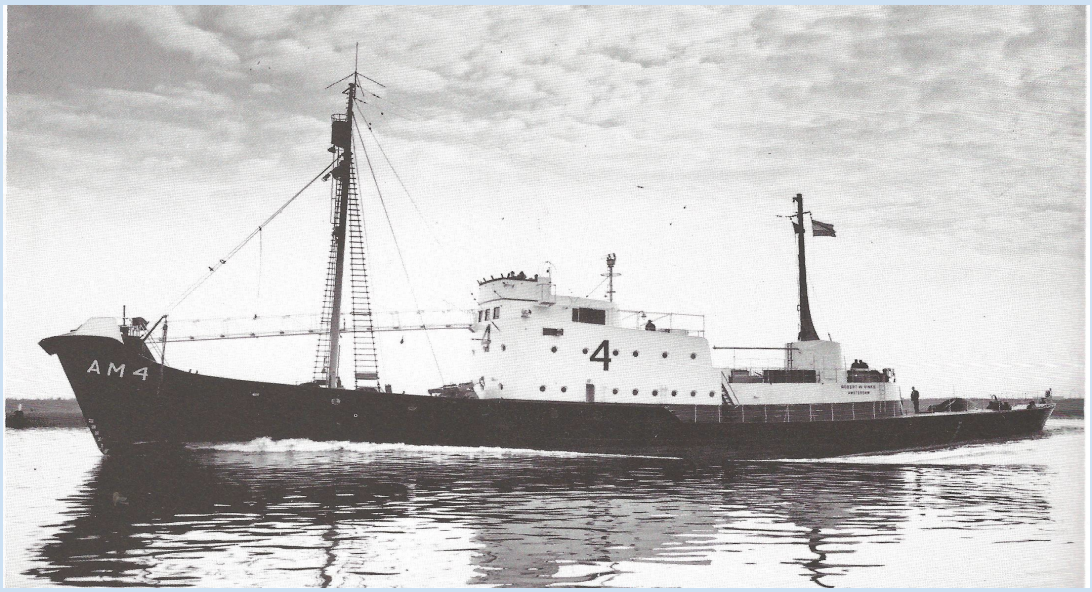
Double-acting, four-stroke 10-cylinder H&W B&W engine: 10,000 bhp

Union-Castle Line's first mail motor ships CARNARVON-, WINCHESTER- and WARWICK CASTLE came from their Belfast yard with four-stroke double-acting engines which one of the Masters disparagingly but probably fairly described as "two thousand tons of revolving scrap iron". When the UK-Cape mail schedule was accelerated shortly before WW 2 requiring improved speed, the ships were re-powered with two-stroke double-acting engines of increased power.

During the 'sixties geared four-stroke medium-speed diesels entered the deep-sea propulsion scene, offering the benefits of higher power density in a reduced "footprint" area and at lower weight and overall cost. Some memorable engines of this species were Ruston AO, Stork-Werkspoor TM410, Pielstick, MaK, MAN, Deutz, Smit-Bolnes, and Nohab – perhaps some more memorable for the wrong reasons.

The over-riding objective when considering all propulsion options has always been that of economics – more for less - and key considerations include specific fuel consumption, fuel type and grade, reliability, maintenance and servicing, staffing, weight and space requirements, maker's technical support and first cost. Undoubtedly the continuing advances made in precision machining (especially related to high pressure fuel injection equipment), filtration, lubricating oils and metallurgy were key to the diesel today having reached its highly-developed and reliable status making it the default engine of choice for most of the world's merchant fleet.

In late-1960 a technical curiosity arrived in Table Bay on her maiden voyage from Holland. This was the free-piston gas-turbine powered whale-catcher ROBERT W VINKE, also known by her registration number: AM 4. Her novel propulsion plant stirred considerable interest in engineering circles locally and abroad. She was one of the large fleet of catchers belonging to the Nederlandsche Maatschappij Voor de Walvischvaart ("NMW"- Netherlands Whaling Company) that over-wintered and refitted in Table Bay Harbour. The fleet factory-ship WILLEM BARENDTSZ II was also a regular visitor to the port.



Robert W Vinke - AM4

As a schoolboy who cycled most weekends to the docks to watch and learn about ships, I was particularly fascinated by this handsome catcher without a funnel. Unfortunately, instead of making money catching whales down in the Antarctic along with her ex-navy converted Flower-class corvette steam sisters, she too often remained alongside spending money undergoing repairs to her free-piston gas generators. I developed special interest in this ship and my frequent week-end visits to her would have represented considerable Voyager Miles.

Built in Rotterdam in 1960 she was a handsome and well-equipped little ship of 62 metres, carried a complement of 21, and when all was well could make 17 knots – really fast for waterline length of just 57 metres. She had two identical sisters built at the same yard – identical except that they were propelled by twin MAN diesels geared to the single screw – THOMAS W VINKE (AM 3) and INGA VINKE (AM 8). The AM 4 was in fact an experimental ship - her owners were persuaded that as a catcher utilizes maximum power virtually throughout the chase, it would not be a bad idea to fit a gas turbine propulsion system. The NWM were not alone in this view. In Britain a year previously a small coastal steamer, GOODWOOD, was re-engined with a free-piston gas turbine installation, and a 9,200 dwt bulk carrier MORAR newbuilding for the Scottish Coal Board was to be similarly powered. At this time another well-respected Dutch ship-owner, Van der Geest, was fitting his newbuilding banana carriers GEESTLAND and GEESTAR with the same type of propulsion from the same makers.

Gas was produced by three 3-cylinder, two stroke, single-acting gas generators of French SEP-SEME-SIGMA (Alsthom) type GS 34, modified and built under licence by Amsterdamsche Droogdok Maatschappij (Amsterdam Dry-dock Company). These so-called "free-piston" gas generators were referred to as "Pescara"- modules, named after the Spanish-born, Paris-based Raoul Pateras Pescara credited with conceiving the concept in the 1920's. A double-ended piston oscillates freely in a closed cylinder. One end of the piston works as a two-stroke diesel engine piston and the other end does duty as an air-compressor piston. Travel of the piston is constrained at one end of the cylinder by the air compressed for diesel ignition and combustion, and at the other end by air compressed for consumption. The exhaust gas so produced is mixed with the hot compressed air then fed to the gas turbine. There is no connecting-rod or crankshaft: motion is exclusively linear as the piston oscillates back and forth. Stroke, power and speed (frequency) is controlled by fuel injection timing and quantity, and by varying the compression ratio.

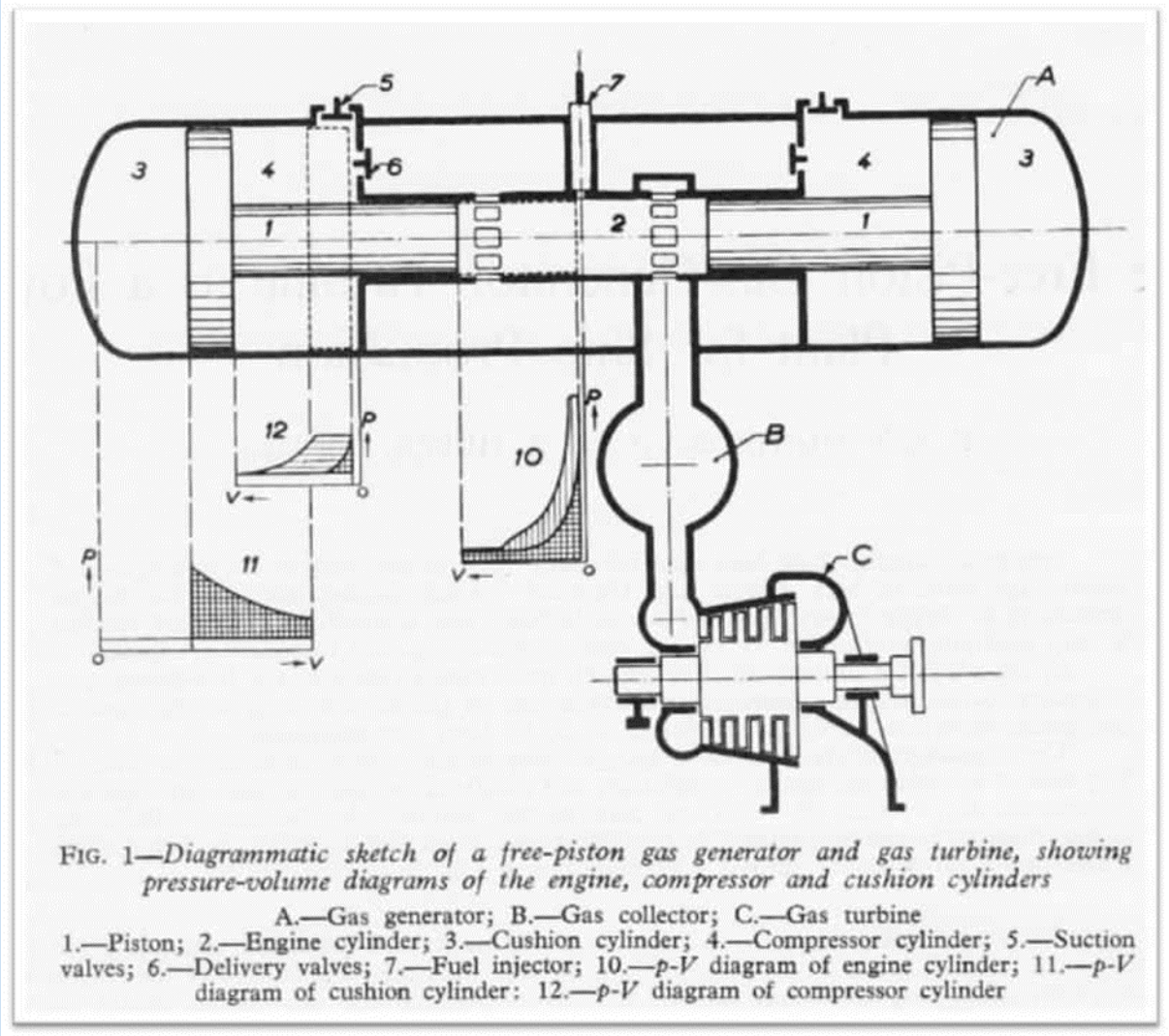


FIG. 1—*Diagrammatic sketch of a free-piston gas generator and gas turbine, showing pressure-volume diagrams of the engine, compressor and cushion cylinders*

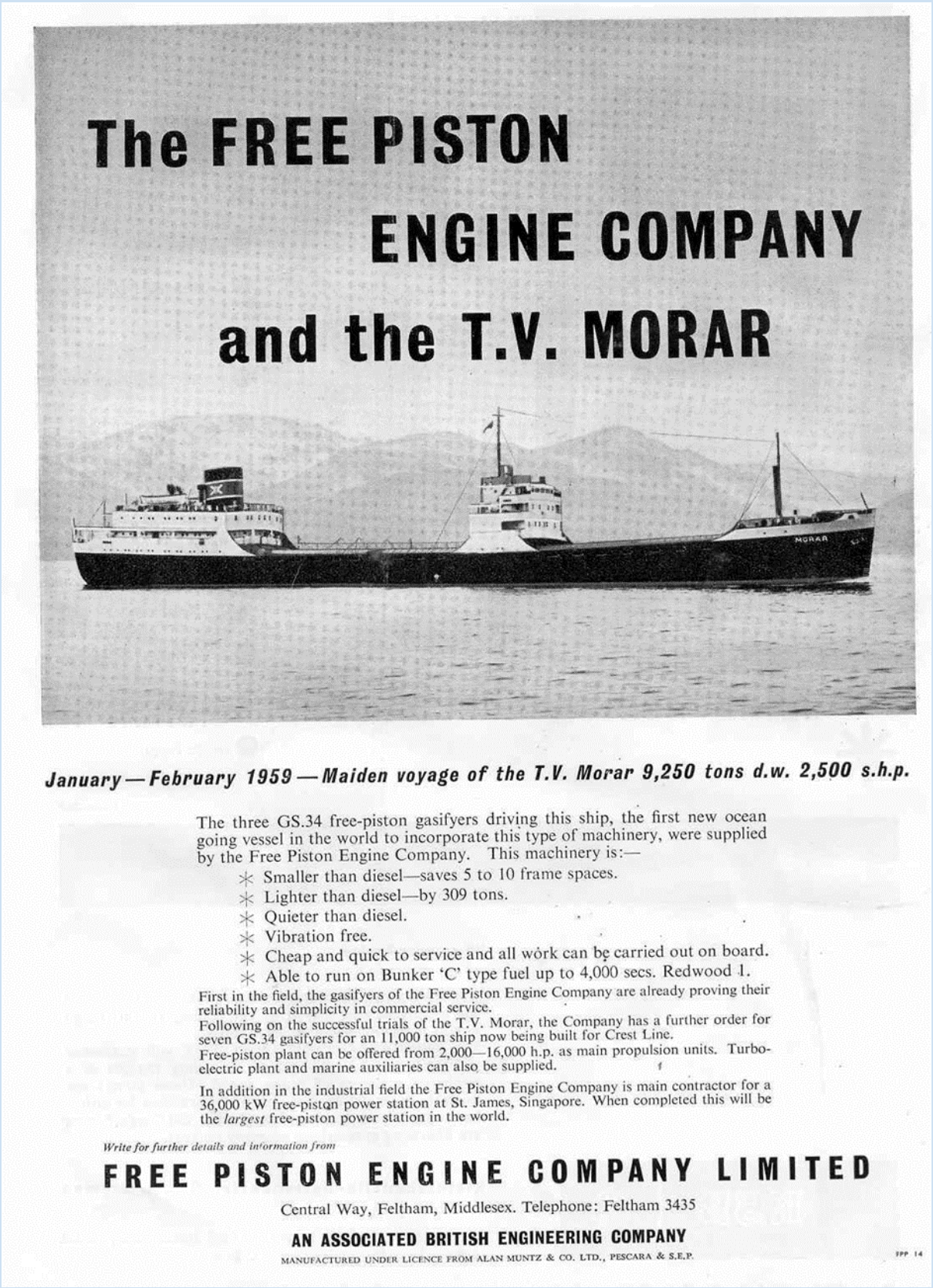
A.—Gas generator; B.—Gas collector; C.—Gas turbine
1.—Piston; 2.—Engine cylinder; 3.—Cushion cylinder; 4.—Compressor cylinder; 5.—Suction valves; 6.—Delivery valves; 7.—Fuel injector; 10.—*p-V* diagram of engine cylinder; 11.—*p-V* diagram of cushion cylinder: 12.—*p-V* diagram of compressor cylinder

The advantage of this system was the ability to manoeuvre the gas turbine in a prompt and simple manner. This is not possible in a conventional axial gas turbine where the air-compressor and turbine share the same shaft and rotate at the same speed. The Pescara free-piston system enabled the gas turbine to be quickly stopped merely by venting the gas to atmosphere, or smartly reversed by means of a change-over valve. This could be done at full power if such ship manoeuvres were necessary. The gas generator could remain running whether or not it was connected to the turbine.

An added benefit of this gas turbine installation was its compact dimensions and lighter weight compared to a conventional diesel installation of the same power.

Supply of substantial water-free fresh air to feed the Pescara units (11,55 kg/sec at full power) on the low-freeboard vessel presented a real challenge, especially given the harsh sea and weather conditions of the ship's intended operating environment. Consequently the air was drawn directly from the engine room with appropriate provision made for engine room air supply and intakes.

Following the ship's maiden arrival in Table Bay in 1960, my father was one of a number of invited guests aboard during a fast publicity trip along the coast to Dassen Island and back. I recall him being most impressed with the ships manoeuvrability, acceleration, and her general handling and seaworthiness. However he was astounded at the very high levels of noise and vibration produced by the non-synchronous irregular pulsing of the gas generators when running at high load. I clearly recall him stating that "whales over the horizon will have ample warning of the ship's approach"! Let alone what the crew and particularly the engine room staff had to put up with. Compared with her diesel-engined sisters AM 3 and AM 8, the whale catch of AM 4 was markedly lower which possibly supports my father's suggestion that the whales could be frightened off.



The propulsion unit was a British-built Rankin & Blackmore Mk 2 gas turbine. It had six ahead stages and one astern stage. With inlet gas pressure of 3 bar at a temperature of 455°C it developed 3,067 shaft horsepower at 5,500 rpm. Coupled via reduction gearing to the shaft it turned the solid propeller at 195 rpm.

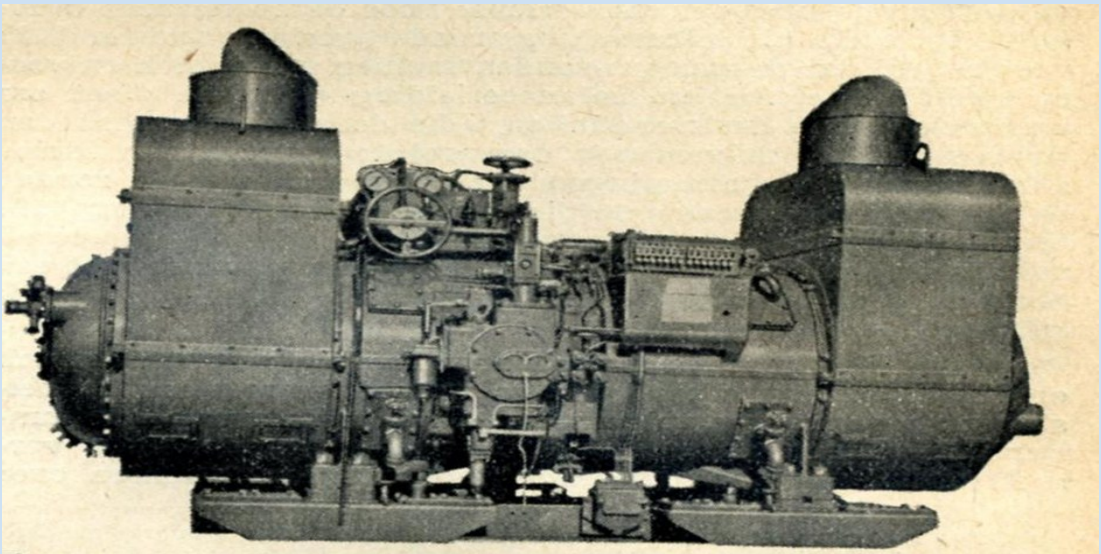


Fig. 2. Vrije-zuiger-gasgenerator GS-34, vermogen 1000 PK.

Vermogen in gas PK bij adiabatische expansie 1250 PK.
Nuttig vermogen aan de turbines-as 1000 PK.
Boring van motorcyl. 340 mm (13.4").
Boring compressorcyl. 900 mm (35.4").
Maximale slag 550 mm (21.6").
Slag bij vollast 455 mm (17.9").
Gemiddelde zuigersnelheid 9 m/sec. (1770 ft/min.).
Aantal slagen/min. 600.
Gasdruk voor de turbine bij vollast 3 ato (42,7 lb/sq in).
Gastemperatuur v. turbine bij vollast 430° C (806 deg F).
Gewicht 8 ton.
Totale lengte 4.14 m (13.5 ft).
Breedte 1.10 m (3.6 ft).

Aside from the noise and discomfort, and despite the ship's good speed when it worked, the reliability of the free-piston installation was a great disappointment. There were many problems associated with durability of parts of the gasifiers. I understood these to be of a metallurgical nature. These troubles necessitated repairs and modifications and frequent specialist expertise from Holland. The ship completed only three whaling expeditions to the ice from Cape Town: 1960/1; 1961/2 and 1962/3. The fourth season was largely spent laid-up in Cape Town on account of engine problems, and she was indefinitely laid -up in 1964. It was during these prolonged enforced stays in port that I got acquainted with the ship and developed an interest in the free-piston gas turbine concept and attempted to understand the apparently insoluble problems. In more recent years I made contact with a Hollander who was one of the engineering specialists who regularly attended the ship in Cape Town. He filled in the gaps and joined the dots for me.

The little ship's owners were not alone in their disappointment with the Pescara gas turbine concept. At about this same time, the owners of all the other mentioned Pescara gas turbine ships also threw in the towel and re-engined their vessels with diesels.

The story of the ROBERT W VINKE AM 4 has an interesting sequel. International conventions were soon to bring an end to whaling and consequently the Netherlands Whaling Company decided to cease operations and dispose of its fleet. All its vessels were sold. With the exception of AM 4's two diesel-engined sisters which were converted to freezer trawlers and the factory ship WILLEM BARENDSZ, all went for scrap. In late 1966 the AM 4 departed Table Bay under tow of the Dutch deep-sea tug WILLEM BARENDSZ (how ironic!) for a Santander (Spain) breakers yard. The scrap yard on-sold the ship intact. The new owner fitted her with diesels like her surviving sisters, and re-equipped her as a hybrid whale catcher / factory ship. In 1967, under the name RUN and Bahamas registry, she reappeared in Table Bay on a number of occasions where her presence raised numerous questions as to her *bona fides,* even in Parliament. In 1972, renamed SIERRA and flying a variety of flags including that of Somalia and Cyprus but still apparently under the same ownership (an outfit headed by a South African, Andrew M Behr), she attracted notoriety after being labelled as a "pirate" catcher by the International Whaling Commission which had for long been attempting to stop commercial whaling. The ship operated in the South Atlantic to various parts of southern Africa and later shifted operations to the North Atlantic with total disregard for international whaling regulations. She was intensively pursued by Greenpeace and Australian Paul Watson of Sea Shepherd Conservation Society, among others. Her end arrived spectacularly. On 16 July 1979 while being chased by Paul Watson's ship SEA SHEPHERD off the coast of Portugal, the concrete-reinforced bow of the activist's ship purposefully rammed SIERRA full in her side. As the vessel was nearing completion of necessary major repairs at Lisnave ship repair yard in Lisbon on 6 February 1980, preparatory to resuming pirate whaling, SIERRA was sunk by underwater limpet mines. Thus her whaling career was terminated. On 8 May the catcher – now a total loss - was raised and was scrapped shortly thereafter.

Nothing further was heard of free-piston gasifiers for marine propulsion. Meanwhile continued development of the diesel, and modern electronic controls and diagnostic systems, make that propulsion option even more reliable, refined and economical. It's the new normal, the new "up and downer". What will succeed it? There are no apparent challengers in the wings……..

Acknowledgements Robert Young

Parkinson's Law

It is a commonplace observation that work expands so as to fill the time available for its completion. Thus, an elderly lady of leisure can spend the entire day in writing and despatching a postcard to her niece at Durban. An hour will be spent in finding the postcard, another in hunting for spectacles, half-an-hour in a search for the address, an hour and a quarter in composition, and twenty minutes in deciding whether or not to take an umbrella when going to the post officw in the next street. The total effort which would occupy a busy man for three minutes all told may in this fashion leave another person prostrate after a day of doubt, anxiety and toil.

Granted that work (and especially paper work) is thus elastic in its demands on time, it is manifest that there need be little or no relationship between the work to be done and the size of the staff to which it may be assigned. Before the discovery of a new scientific law—herewith presented to the public , and to be called Parkinson's Law*—there has, however, been insufficient recognition of the implications of this fact in the field of public administration. Politicians and taxpayers have assumed (with occasional phases of doubt) that a rising total in the number of office workers must reflect a growing volume of work to be done. Cynics, in questioning this belief, have imagined that the multiplication of clerks must have left some of them idle or all of them able to work for shorter hours. But this is a matter in which faith and doubt seem equally misplaced. The fact is that the number of the clerks and the quantity of the work to be done are not related to each other at all. The rise in the total of those employed is governed by Parkinson's Law, and would be much the same whether the volume of the work were to increase, diminish or even disappear. The importance of Parkinson's Law lies in the fact that it is a law of growth based upon an analysis of the factors by which that growth is controlled.

The validity of this law must rests mainly on statistical proofs, which will follow. Of more interest to the general reader is the explanation of the factors that underlie the general tendency to which this law gives definition. Omitting technicalities (which are numerous) we may distinguish, at the outset, two motive forces. They can be represented for the present purpose by two almost axiomatic statements, thus:

Factor I.—An office worker wants to multiply subordinates, not rivals; and

Factor II.—Office workers make work for each other.

We must now examine these motive forces in turn.

The Law of Multiplication of Subordinates

To comprehend Factor I, we must picture a individual called A who finds himself overworked. Whether this overwork is real or imaginary is immaterial; but we should observe, in passing, that A's sensation (or illusion) might easily result from his own decreasing energy—a normal symptom of middle-age. For this real or imagined overwork there are, broadly speaking, three possible remedies

(1) He may resign.

(2) He may ask to halve the work with a colleague called B.

(3) He may demand the assistance of two subordinates, to be called C and D.

There is probably no instance in history of A choosing any but the third alternative. By resignation he would lose his pension. By having B appointed, on his own level in the hierarchy, he would merely bring in a rival for promotion to W's vacancy when W (at long last) retires. So A would rather have C and D, junior men, below him. They will add to his consequence; and, by dividing the work into two categories, as between C and D, he will have the merit of being the only man who comprehends them both.

It is essential to realise, at this point, that C and D are, as it were, inseparable. To appoint C alone would have been impossible. Why? Because C, if by himself, would divide the work with A and so assume almost the equal status which has been refused in the first instance to B; a status the more emphasised if C is A's only possible successor. Subordinates must thus number two or more, each being kept in order by fear of the other's promotion. When C complains in turn of being overworked (as he certainly will) A will, with the concurrence of C, advise the appointment of two assistants to help C. But he can then avert internal friction only by advising the appointment of two more assistants to help D, whose position is much the same. With this recruitment of E, F, G and H, the promotion of A is now practically certain.

The Law of Multiplication of Work

Seven officials are now doing what one did before. This is where Factor II comes into operation. For these seven make so much work for each other that all are fully occupied and A is actually working harder than ever. An incoming document may well come before each of them in turn. Official E decides that it falls within the province of F, who places a draft reply before C, who amends it drastically before consulting D, who asks G to deal with it. But G goes on leave at this point, handing the file over to H, who drafts a minute, which is signed by D and returned to C, who revises his draft accordingly and lays the new version before A.

What does A do? He would have every excuse for signing the thing unread, for he has many other matters on his mind. Knowing now that he is to succeed W next year, he has to decide whether C or D should succeed to his own office. He had to agree to G going on leave, although not yet strictly entitled to it. He is worried whether H should not have gone instead, for reasons of health. He has looked pale recently—partly but not solely because of his domestic troubles. Then there is the business of F's special increment of salary for the period of the conference, and E's application for transfer to another department. A has heard that D is in love with a married typist and that G and F are no longer on speaking terms—no one seems to know why. so A might be tempted to sign C's draft and have done with it.

But A is a conscientious man. Beset as he is with problems created by his colleagues for themselves and for him—created by the mere fact of these officials' existence—he is not the man to shirk his duty. He reads through the draft with care, deletes the fussy paragraphs added by C and H and restores the thing back to the form preferred in the first instance by the able (if quarrelsome) F. He corrects the English—none of these young men can write grammatically—and finally produces the same reply he would have written if officials C to H had never been born. Far more people have taken far longer to produce the same result. No one has been idle. All have done their best. And it is late in the evening before A finally quits his office and begins the return journey to Constantia. The last of the office lights are being turned off in the gathering dusk which marks the end of another day's administrative toil. Among the last to leave, A reflects, with bowed shoulders and a wry smile, that late hours, like grey hairs, are among the penalties of success.

The Scientific Proofs

From this description of the factors at work the student of office politics will recognise that administrators are more or less bound to multiply. Nothing has yet been said, however, about the period of time likely to elapse between the date of A's appointment and the date from which we can calculate the pensionable service of H. Vast masses of statistical evidence have been collected and it is from a study of this data that Parkinson's Law has been deduced. Space will not allow a detailed analysis, but research began in the company budgets. These were chosen because the finance department responsibilities are more easily measurable than those of (say) human resources.

Using the accompanying table derived from British Admiralty statistics for 1914 and 1928. The criticism voiced at the time centred on the comparison between the sharp fall in numbers of those available for fighting and the sharp rise in those available only for administration, the creation, it was said, of "a magnificent Navy on land." But that comparison is not to the present purpose. What we have to note is that the 2,000 Admiralty officials of 1914 had become the 3,569 of 1928; and that this growth was unrelated to any possible increase in their work. The totals during that period had diminished, in point of fact, by a third in men and two-thirds in ships. Nor, from 1922 onwards, was its strength even expected to increase, for its total of ships (unlike its total of officials) was limited by international agreements. Yet in these circumstances there was a 78.45 per cent increase in officials over a period of fourteen years; an average increase of 5.6 per cent a year on the earlier total. In fact, as we shall see, the rate of increase was not as regular as that. All we have to consider, at this stage, is the percentage rise over a given period.

ADMIRALTY STATISTICS

	1914	1928	Percentage Increase or Decrease
Capital ships in commission..	62	20	– 67·71
Officers and men in Royal Navy.....	146,000	100,000	– 31·51
Dockyard workers.....	57,000	62,439	+ 9·54
Dockyard officials and clerks	3,249	4,558	+ 40·28
Admiralty officials.....	2,000	3,569	+ 78·45

Can this rise in the total number of administraors be accounted for except on the assumption that such a total must always rise by a law governing its growth? It might be urged, at this point, that the period under discussion was one of rapid development in naval technique. Engineer officers were beginning to be regarded as almost human. In so revolutionary an age we might expect that storekeepers would have more elaborate inventories to compile. We might not wonder to see more draughtsmen on the pay -roll, more designers, more technicians and scientists. But these, the dockyard officials, increased only by 40 per cent in number, while the men of head office increased by nearly 80 per cent. For every new foreman or electrical engineer at Simonstown there had to be two more clerks at Fishhoek station.
From this we might be tempted to conclude, provisionally, that the rate of increase in administrative staff is likely to be double that of the technical staff at a time when the actually useful strength (in this case, of seamen) is being reduced by 31.5 per cent. It has been proved, however, statistically, that this last percentage is irrelevant. *The officials would have multiplied at the same rate had there been no actual seamen at all.*

It would be interesting to follow the further progress by which the 8,118 staff of 1935 came to number 33,788 by 1954. The relevant statistics are set down below. Before showing what the rate of increase is, we must observe the extent of this department's responsibilities was far from constant during these twenty years. The colonial territories were not much altered in area or population between 1935 and 1939. They were considerably diminished by 1943, certain areas being in enemy hands. They were increased again in 1947, but have since then shrunk steadily from year to year as successive colonies achieve self-government.

COLONIAL OFFICE OFFICIALS

193[illegible]	1939	1943	1947	1954
372	450	817	1,139	1,661

It would be rational, prior to the discovery of Parkinson's Law, to suppose that these changes in the scope of Empire would be reflected in the size of its central administration. But a glance at the figures shows that the staff totals represent automatic stages in an inevitable increase. And this increase, while related to that observed in other departments, has nothing to do with the size—or even the existence—of the coloonies. What are the percentages of increase? We must ignore, for this purpose, the rapid increase in staff which accompanied the diminution of responsibility during World War II. We should note rather the peacetime rates of increase; over 5.24 per cent between 1935 and 1939, and 6.55 per cent between 1947 and 1954. This gives an average increase of 5.89 per cent each year, a percentage markedly similar to that already found in the Admiralty staff increase between 1914 and 1928.
Further and detailed statistical analysis of departmental staffs would be inappropriate in such an article as this. It is hoped, however, to reach a tentative conclusion regarding the time likely to elapse between a given official's first appointment and the later appointment of his two or more assistants. Dealing with the problem of pure staff accumulation, all the researches so far completed point to an average increase of about 5¾ per cent per year. This fact established, it now becomes possible to state Parkinson's Law in mathematical form, thus:
In any administrative department the staff increase may be expected to follow this formula:

$$x = \frac{2k^m + p}{n}$$

Where k is the number of staff seeking promotion through the appointment of subordinates; p represents the difference between the ages of appointment and retirement; m is the number of man-hours devoted to answering minutes within the department; and n is the number of effective units being administered. Then x will be the number of new staff required each year.
Mathematicians will, of course, realise that to find the percentage increase they must multiply x by 100 and divide by the total of the previous year, thus

$$\frac{100\,(2k^m + p)}{yn}\ \%$$

where y represents the total original staff. And this figure will invariably prove to be between 5.17 per cent and 6.56 per cent, irrespective of any variation in the amount of work (if any) to be done.
The discovery of this formula and of the general principles upon which it is based has, of course, no emotive value. No attempt has been made to inquire whether departments ought to grow in size. Those who hold that this growth is essential to gain full employment are fully entitled to their opinion. Those who doubt the stability of an economy based upon reading each other's minutes are equally entitled to theirs.
Parkinson's Law is a purely scientific discovery, inapplicable except in theory to the politics of the day. It is not the business of the botanist to eradicate the weeds.
Enough for him if he can tell us just how fast they grow.

Acknowledgements: The Economist

Where do Marine Engineers go for Qualifying Sea Time?

A Marine Notice was previously issued by SAMSA regarding terminology and definitions for propulsive power using the term “kilowattage”.

Notwithstanding the incorrect terminology, ie the word itself does not exist, the emphasis appeared to be on propulsive power only. This is no doubt based on the old system of a main engine driving a propeller shaft [or a combination thereof].

The examiner will in terms of the relevant regulations draw up a candidate’s submitted sea time schedule and allocate IN TERMS OF THESE RELEVANT REGULATIONS the required sea time for the grade of certificate of competency applied for.

Should the candidate not be eligible for the grade applied for he must be advised in writing and in terms of which regulations his/her sea time is not accepted and what requirements are to be met for the qualifying sea time.

In today’s marine world, it seems that the term propulsive power may become redundant due to the numerous propelling and power systems available on the marine market these days.

Today, Marine Engineers are employed on various types of vessels from large 4000 guest passenger vessels to small platform supply, dive support vessels, cable and pipe layers and anchor handlers although these vessels are increasing in size as the oil and gas industry moves further off-shore.

Marine Engineers are required by local authority and of course STCW legislation to complete the requisite number of months/years at sea on machinery duties that vary from vessel to vessel.

Modern tonnage uses modern propulsion systems and it is not unusual to find a combination of 100000 BHP power generating sets driving a collection of thrusters, electric azipods and/or steering rudder propellers and a combination of water jets.

For instance drill ships and dive support vessels may have up to eight high performance V16 trunk piston engines, a dynamic positioning system rated to level two [DP-2, some even are DP-3 rated] with an output of 60000 BHP with at least 70% of this power instantly available but with the vessel going no-where while the vessel is performing the designed function.

While the traditional 6 cylinder two-stroke slow speed crosshead engine with fixed propeller shaft and 5 bladed propeller must still remain the benchmark for sea time calculation, to only consider this type of machinery as a means to obtain sea time shows a dinosaur mentality which has to be upgraded as soon as possible.

A rather dull yet productive species, these engineers."
reportedly said by-Capt. Silverton, MV Springtide

Further examples of power systems include the highly specialised off-shore and large passenger vessels under construction today where the thrusters are electrically driven and the entire control system responds to a small joystick on the bridge, operating thrusters and rudder propellers plus altering blade pitch angles, the power grid supplying all ship consumers, there being no actual propeller shaft.

These power systems require all output power to be feeding into main power distribution switchboards which of course are operating now at 6.0 and 11.0 KV. The gross power should be considered when computing sea time for a prospective candidate for examination.

These systems are extremely complicated and make the old two stroke engine, including the new MAN-E and Wärtsilä WX [flex] series engines quite simple to operate in spite of the complicated electronics.

It would be interesting to obtain confirmation from the examining body in South Africa as to the method of calculating sea time and what is not considered for sea time bearing in mind that Marine Engineers are employed on a wide range of vessels and propulsion systems.

It would be incomprehensible if sea time aboard a DP-2 rated drill ship is not considered but the PSV standing by the drill ship [also DP-2 rated] is. To not consider drill ship power systems as sea time shows a complete lack of understanding of the new power systems, positioning and propulsion arrangements available today.

It would severely curtail an engineer's aspirations for sea time and the associated superior qualifications to find that an examiner has rejected his/her sea time as the sea time has been performed on a self propelled and self positioning drill ship.

It is a matter of urgency that if the sea time is NOT considered then the regulations must be changed immediately. It would be expected that any examiner would allow the examination to continue and obtain a ruling from the overseeing body as to whether the certificate may be issued or not.

It would also be expected that if the sea time is not accepted, the ruling would be accompanied by explanation in writing of the relevant regulation/act sections allowing the candidate to then make the decision to proceed to an examining authority that does accept this type of sea time.

One cannot imagine that an examiner would reject sea time on a DP-2 drillship while accepting the sea time of the next applicant who has remained on a semi laid up container vessel running only a harbour generator.

Examining and assessment authorities must move with the times and be more familiar with power systems that are coming on stream.

The final engineering examination would soon make the examiner aware of the candidate's ability to operate any type of machinery because that is what the criteria is here not the power unit the engineer trains on.

There is a further anomaly apparent when a shore based marine engineer who has not been to sea for many years but has "carried out surveys on ships" is eligible after completion of the requisite STCW courses to revalidate their certificate of competency for sea-going service.

Carrying out surveys on ships is vastly different to actually sailing in these ships and a hard lesson awaits those who think that the old days are still applicable.

A similar case has recently applied to a Certificated Master Mariner who has not been to sea for at least 30 years and who is allowed to attend a number of shore based courses and may be employed [as a Master/Captain] on a vessel of the likes of the Oasis of the Seas or similar.

One only has to attend on board a triple E to see the extent and advances made in marine engineering technology and navigation to realise that after 30 years ashore, a revalidation might get you a position in charge of the many swimming pool, wave pools and the like water maintenance systems, or perhaps in charge of the sewage plant that treats waste from 6000 persons/day

For an engineering examiner to have a revalidated certificate of competency does not mean that the examiner has a superior qualification to the candidate.

There are understandable difficulties in ensuring that examiners remain competent and it is assumed that they are continuously updating their knowledge however, it does appear that the examiners and the colleges have differing views on how a marine engineer officer should be educated and trained.

It is understood that in terms of the STCW legislation, certificates of competency of non sea going engineers [and navigators] can be revalidated but there should be significant limits placed on the applicant.

You will never lose your Certificate of Competency regardless of the STCW endorsement and responsible persons should stop stating that the non revalidated STCW Certificates of Competency have expired.

It is only the endorsement that has expired, not the qualification. Furthermore it is called Certificate of Competency not a ticket!

When one looks at the quality of sea going staff these days, it is quite clear that in spite of STCW standardising all qualification levels there are still large differences between signatory states.

Perhaps when we can stop arguing whether a person at sea is a seaman or a seafarer, we can get on with training them to the acceptable standard required.

The failure rate of students ranging from the officer of the watch [OOWE] to class one engineer [MEO Class 1] is appalling and is not much better when considering the fishing grades [Motorman Grades] and port operations CoC's.

Finally, it would be expected that the examiner of engineers would have an additional qualification to the class one engineer candidate and some experience of the various types of vessels in service today.

Acknowledgements Dave Fiddler

The opinions of the author of this article are not necessarily the opinions of the Editors of this publication, or of SAIMENA..

If you want to be successful tomorrow, you must be teachable today.

Bravo Zulu

Marine Engineer and Electrotechnical Officer

POP-503

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Applicable Reference	STCW A-111/2
Duration	Three Days
Maximum number of candidates	Fifteen (15)
Approved Assessors	Mr H van Niekerk
Approved Facilitators	Mr J M Adams, Mr H van Niekerk

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Date of issue: 16 May 2017 — Accreditation valid from: 12 May 2017

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We look forward to developing some new relationships!

Kind Regards

The Editors