

HEART OF A SHIP

By Allan Goran

What? There's nothin' romantic about a ship until she's launched! Nonsense! man, ye dianna ken what ye're talkin' about. The buildin' o' every ship is responsible for scores o' romances—ye, an' for scores o' sore hearts.

Peter Crawford in the pattern shop puts in a lot o' overtime an' saves every penny o' the extra money—he tells Jean MacLeod that they can get married at the Glenside Fair. Ma'tha Gilchrist, the old foreman moulder, overworks himself an' brings on a stroke. That's about the end o' the story for old Ma'tha, but Andy Paterson steps up into Ma'tha's job, an' Andy's wife decides that she can fit to a house wif an' extra room. Young Hector Kerr, one o' the draughtsmen, thinks out an improvement in electric winches. The firm patents the design, an' young Hector has taken the first step towards bein' a works manager some day.

Romance! Man, there's no lack o' romance about the buildin' o' a ship. Long before the salt water touches her plates she's brought good luck an' bad luck to hundreds o' men an' women an' weans.

Two years ago we launched a big Diesel-engine ship for the Argentine mail trade. Just before work on her had begun it was decided to increase her draught by a foot an' a half. Now, ye canna do a thing like that without causin' a lot o' trouble. The draughtsmen ca'd the Argentine firm a' the nasty names they could think o', then got down to makin' the necessary alterations to the drawin's.

One day, a good many months later, I had occasion to go up to the drawin' office—I'm Head Foreman in the machine shop; I don't think I tell ye that. I was talkin' to Donald MacMurray, Chief Draughtsman, about a difficulty we were havin' wi' the machinin' o' the engine cylinders, when a thing caught my eye that made me stop in the very middle o' what I was sayin'.

On Donald's table, on the top o' a pile o' drawin's, was a blue-print o' the stern-post—the stern-post, if ye don't happen to ken, is the big heavy steel castin' that carries the propeller an' the rudder. I had been lookin' at the drawin' o' the rudder just before I came up to the drawin' office, an' the sizes were still fresh in my mind. An' the depth o' the stern-post an' the depth o' the rudder—didna agree!

A draughtsman lives continually over a mine that's set an' ready to blow up—any day a discrepancy may be discovered in his drawin's. Donald MacMurray at once looked grave when I said sharply: "He's ye a drawin' o' the rudder there, Donald?"

Wi' fingers that were suddenly a' thumbs, Donald turned over the drawin' on his table until he came to the one I had asked for.

One glance at it told me that I wasna mistaken. I said nothin'; only put my finger on the size on one drawin' an' the size of the other that should ha' corresponded.

"God!" said Donald, an' his face went as white as the paper on his board.

Neither o' us needed to tell the other how the thing had happened. The draughtsman who had altered the drawin' got confused wi' his figures, and had made the stern-post, not a foot an' a half longer—but two feet an' a half longer! The usual thing. A young fellow in a hurry, wi' his mind runnin' on the wee lady-tracer he was goin' to take to the pictures that night, a mistake he'd 'taint is the easiest thing in the world to mak'.

In a voice that was no' like his own, Donald said: "I'd better tell Bob!" He touched a button at the side o' his table.

It was only then that I realized what a terrible position Donald was in. The stern-post for a big ship weighs tons. The castin' was by this time machined and practically ready for fittin'; it represented a dead loss to the firm o' hundreds o' pounds.

Donald an' I knew the rules. Wee mistakes can be overlooked, but when a man is guilty o' a costly blunder, he is told to "put on his coat."

The man Donald had summoned was his assistant, or leadin' hand, who was technically guilty, for it was his job to see that the drawin's were right before they were issued to the shops.

But this man was much more than just an ordinary assistant. He was the man over whose shoulders Donald had climbed, only a month before, to the position of Chief Draughtsman. His name was Bob MacMurray—an' he was Donald's own elder brother!

W' him for twenty years an' never had a cross word w' him, I stood there an' didna say a thing on Bob MacMurray's behalf.

But I ket fine what this would mean to Bob. Bob was a lot older than Donald, so there was no chance at a' that he would get another job anythin' like the one he had—if he got another job o' any kind, w' trade so slack.

Bob had been a well-doin' man a' his life. By scrapin' an' bein' careful, he had made one o' his sons a doctor. He was goin' to put his other son through the university an' make him a minister. If Donald acted accordin' to the rules, he would just about break Bob's heart.

To hide his feelin's Donald answered his brother angrily.

"Ye know very well that I can't tell ye to go."

"Ye've got to, Donald. Ye've got no choice," Bob pointed out.

Now that Bob's watchful eye was no longer on his men, some o' the younger fellows had burst into subdued harmony, an' the sound o' their singin' came faintly from the other side o' the glass partition that separated Donald's room from the drawin' office. One industrious youngster was whistlin' cheerily as he worked. That's the way o' the world!

Donald pretended that he hadn't heard what Bob said.

"I'll see the Managing Director at once, and get it over. I'll put up the best fight I can for ye."

But Bob MacMurray threw himself between his brother an' the door.

"Ye mustn't do it, Donald—ye mustn't do it," he said, earnestly.

"Ye would do yourself infinite harm, particularly as ye are o'it on trial yet. Whereas if ye—if ye did what ye know is the right thing to do, it would be all the more to your credit—that—that I'm your father."

Donald raised his head, but didna look round.

"What a predicament to be in," he groaned. "The choice of ruinin' my brother or—"

"Spoilin' your own career," Bob finished for him.

Donald turned to me.

More Facts About Cosmic Rays

Further Experiments Indicate Variation With Time of Day

A few weeks ago Professor A. H. Compton reported in The Physical Review that, contrary to Professor Millikan's findings, the cosmic rays vary in intensity with the latitude, a phenomenon best accounted for by supposing them to be electrons, which, under the influence of the earth's magnetic attraction, tend to collect around the Poles. Professor Compton now makes an equally important announcement in the same periodical—an announcement to the effect that the cosmic rays vary with daylight.

It has long been a moot question whether the intensity of the cosmic rays varies as the sun and different groups of stars rise and set. Dr. Hess, an indefatigable German investigator, has been insisting that a certain proportion of the cosmic rays, about one-half of 1 per cent. of the total, is due to the sun. Millikan obtained similar results, but attributed them to experimental error and argued that the rays come from all parts of the sky with equal intensity. On the whole, the evidence seemed to support Millikan.

Compton's recent measurements, made on a high mountain near Denver, indicate that the cosmic rays do indeed vary with the time of day and therefore with the intensity of sunlight. He found an average difference of 1 per cent. between the twelve daylight and the twelve night hours. The conclusion is reached that a certain atmospheric phenomenon, "suggests that the portion of space in the neighborhood of the sun emits cosmic rays more copiously than the more remote regions."

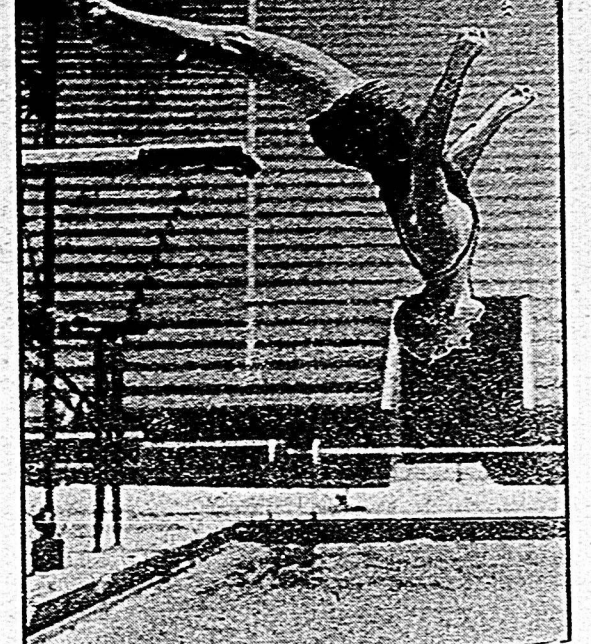
Professor Millikan and his associate Dr. Cameron, have shown that the energy of the cosmic rays received by the earth is about equal to that of starlight. From this follows that the "energy in the universe in the form of cosmic rays is of the same order as that in the form of light. Compton's experiment support the contrary view—that we do not receive a fair sample of the cosmic rays," so that it is difficult to form any trustworthy estimate of the energy of cosmic rays in interstellar space. Millikan's theory that the cosmic rays result from the creation of matter in interstellar space is based on measurements of their energy. Hence Compton's new announcement, coupled with that previously made on the electronic nature of the cosmic rays, makes it necessary to reconsider the whole question anew.

Soon after Roentgen discovered the X-rays physicists began to apply them to look, as it were, through the flesh. In 1896, when the rays were discovered, it took about twenty minutes to obtain a radiograph of a hand. The other day Dr. John R. Carty announced that there will be installed in the New York Hospital-Cornell Medical Centre, to be opened on Sept. 1, an apparatus which will take X-ray snapshots in 120th of a second. That such progress is possible in little more than a generation is due largely to the work of Dr. W. D. Coolidge of Schenectady.

Instead of photographing bones or internal organs a physician may study them by means of the fluorescent screen coated with a phosphorescent compound such as calcium tungstate. The X-rays which pass through the less dense portions of the body fall upon the screen and cause it to glow. Bones and dense organs which cut off the rays appear as shadows. Fluoroscopic examinations are especially valuable in diagnosing derangements of the stomach and intestines as a meal is digested which consists largely of bismuth and therefore appears black on the screen.

News comes from the California Institute of Technology that Dr. Jesse W. M. Dumond and Dr. Archer Hoyt have improved the fluoroscope so that it is now possible to present three-dimensional X-ray images to which the calipers can actually be applied. As might be suspected, two X-ray tubes cast shadows on the fluoroscopic screen from different angles, the spacing being about equal to that

A Difficult Turn



A picture that calls forth the envy of all who have not yet been swimming this season. Alfred Phillips, Toronto, of the Canadian swimming team is giving the olympic pool a try-out.

which separates the human eyes. First one tube flashes rays and then the other. Thus sixty images appear from two different angles in a second. The images are examined by means of a "selector" which imparts stereoscopic qualities to them. They are reversed, moreover, just as if they were seen in a mirror, an effect which is produced by the crossing of the X-rays and the "winking" of the tubes. Broken bones will be more readily set and bullets and needles and other foreign bodies more easily found with the new fluoroscopic screen.

RUSSIAN INDUSTRIAL RESEARCH

According to Arkadij Tmirjasev, a Moscow physicist, Russian scientists were at first opposed to the Five-Year Plan. Before the World War there were no research institutions in Russia outside the universities. In 1931 there were 155 industrial laboratories; and by the end of the present year the number will be increased by 100. The American Chemical Society reports that Russia is now producing sulphuric acid in the largest plant yet erected in Europe, synthetic wool, a new building material made from cement, tar and pitch, superphosphate and phosphoric acid.

The consolidation of the chemical industries in Middle Asia—especially the artificial fertilizer industry and the pharmaceutical industry, as well as the dye and lacquer industry—is to be promoted extensively this year. Accordingly, four chemical combines are to be set up as follows: The Tschirshik-Karamasarski combine, which will be engaged in the manufacture of artificial fertilizers and in working up variegated ores; the Shorsinski combine in the Fergana Valley; the Wachs-Schirabad-Taur-ladski combine which will utilize sulphur and cotton waste, and the Karabagasski combine, which will utilize the sulphate deposits.

LEYDEN'S HUGE ELECTRO-MAGNET

We have heard much in recent months about splitting and smashing atoms in an effort to find out something about the constitution of the usual most impregnable nucleus. The usual practice is to hammer the atom to pieces by electrons, cosmic rays, X-rays, or the alpha particles of radium. Although these methods have been fairly successful, it cannot be maintained that the nucleus is an open book. A few physicists in the United States and Europe have decided that they will try to tear the atom apart with huge magnets.

The University of Leyden recently installed one of these giants, which was built to its order by Siemens & Halske of Berlin. It weighs about seven tons, yet it can be swung in any direction as easily as a telescope. All the magnetic force can be concentrated within a few cubic inches. Automatic switches are provided to prevent disruption of the windings and avoid danger to the attendants when the current is thrown on or off.

The late Professor Kammerlingh Onnes of the University of Leyden, whose dream it was to have the magnet constructed, discovered that at nearly absolute zero "the phenomenon of superconductivity becomes apparent. He cooled a ring of pure lead to the temperature of liquid helium minus 452.4 degrees F.) and sent an electric current through it. When he broke the circuit the current continued to flow. His calculations showed that it would keep on flowing for about two years, provided the temperature did not rise.

The great magnet of the University of Leyden offers resistance to the passage of current through its coils. Resistance means heat. Here we have a baffling vicious circle that makes it difficult to disrupt atoms electromagnetically. But what if we cool the coils by liquid helium? The resistance would be reduced to almost nothing, and thousands of horsepower could be applied for the brief fraction of a second necessary. So it happens that the great magnet of Leyden will be cooled with liquid helium in the laboratory of the great Kammerlingh Onnes.—W. K. in The N. Y. Times.

Germany's Security

By Kurt von Schleicher, German Minister of Defence, in a Radio Speech.

I did not think it possible that after all the bitter, sad post-war experiences there should still be Germans who believe our small army is sufficient for the protection of our frontiers.

The naked truth is that no other European nation has so little of that security for which, paradoxically enough, the world's strongest military power keeps on calling. Stresemann characterized this attitude of our eastern neighbor as hypocrisy, and I believe there are few Germans who do not agree.

The other way for Germany to obtain security is by transforming—not expanding—her army so that it will guarantee a certain degree of security; and with reference to the finality; and with reference to the final German declaration at Geneva, I do not want to leave the slightest doubt that we are going to choose this way if full security and parity are denied us in the future.

Gold is the fool's curtain which hides all its defects from the world.—Fethallah.

Facing the Future

By Pierre-Etienne Flandin, Former French Finance Minister in a Radio Speech From Paris.

For a long time nations believed that they could remain isolated from each other and become immune against the contagion of the world crisis. Experience has proved the contrary, and it is to be hoped that they will now agree to look straight at the results.

It is useless to believe that a miracle, with a magic stroke of the wand, will re-establish prosperity. We shall not be able to get out of the crisis except by employing efficient remedies.

To speak of international peace and co-operation while restricting in a thousand ways the free circulation of goods of capital and of individuals, is about the same as if one boasted of the liberty of people who are kept imprisoned.

The Lausanne conference has made European opinion stage a great step forward. It will be continued by a committee which will study the question of the restoration of the countries of Central Europe and by an economic conference which must resolve the problem of the reduction of the external indebtedness of certain nations and the more general problem of international economic relations.

However pre-occupied American opinion may be with its own internal problems, I trust that it will associate itself with this work which is indispensable for the restoration of the world's business.

What New York Is Wearing

Illustrated Dressmaking Lesson Furnished With Every Pattern



3182

Cottons! Cottons! And more cottons! Isn't it snappy? It's white batiste with vivid blue dots of course. Plain batiste ruffling on the edge of the cape collar is dainty touch. Diagonal seaming gives lovely slimmness to the hips of the fitted gored skirt.

Its very easily fashioned. Style No. 3182 is designed for size 12, 14, 16, 18, 20 years, 36 and 38 inches bust. Size 16 requires 3 1/2 yards of 39-inch material. Printed and plain crepe silk are also very chic.

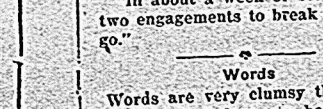
Tub silks in gay stripes, dots or in plain white or pastel shades is attractive.

HOW TO ORDER PATTERNS.

Write your name and address plainly, giving number and size of such patterns as you want. Enclose 20c in stamps or coin (coin preferred); wrap it carefully for each number, and address your order to Wilson Pattern Service, 73 West Adelaide St., Toronto.

Cleaning Reveals Old Architecture

London—A "spring clean," that has lasted for 10 years, ended here recently when the delicate, carved work of the Henry II Chapel at the east end of Westminster was revealed in all its original beauty. The chapel has been regarded since its construction, just before the Reformation, as one of the architectural masterpieces of England.



"Are you going back to the city?" "In about a week or so. I have two engagements to break before I go."

Words are very clumsy things. I like less and less to handle my friends' sacred feelings with them.

Fertilized Pastures

When the Canadian farmer speaks of pastures, he has in mind three kinds. First, permanent pastures, which in the main consist of lands which have rarely been ploughed, but have been in grass ever since the forest was cleared; second, land which has been under the plough but which has been sown to a mixture of grass and clovers and left as permanent pasture for a long period of years; third, grass land in the rotation from which, last year, hay was cut but which this year is left for pasture and next year will be ploughed and sown to cultivated crops. This article deals with the first type of pasture only.

For the past three years, tests of the effect of dressing natural permanent pasture have been carried out by the Department of Chemistry, Ontario Agricultural College. A mineral application was made for a four-year period and nitrogen applied annually in the spring. The first cutting results for 1932 are in accord with those harvested in other years. The minerals alone show a material increase in clover in the early pasture, while the addition of nitrogen tends to increase the grass at the expense of the clover in the early pasturing. Later cuttings in previous years show a material net increase in pasture where nitrogen, phosphoric acid and potash have been applied. At this date it is not possible to give a comparison of pasture days, since the stock have not, as yet, been over the entire fertilized and unfertilized areas. It is interesting to note, however, that last year's records show an increase of almost 60 per cent in pasture days where complete fertilizers were used, and 23 per cent where minerals alone were applied.

In one pasture recently examined, evidence is accumulating as to the effectiveness of treating many of the permanent pastures. A splendid example occurs in south central Bruce where minerals were applied early in 1929 and supplemented with a dressing of nitrogen carrier shortly after. Just before the livestock were turned into the fertilized area, the clover which had almost taken possession of the area stood nearly knee high and actual cuttings showed over six times the pasturage on the fertilized area compared with the unfertilized. Such results have been noted in a number of cases.

Improved pasture means more beef and more milk at less cost per unit.

Women Sewing Again Embroidery Comes Back

Those old-fashioned girls who are clever with their needles and like doing embroidery work need no longer feel ashamed of themselves. They are not behind the times, after all, but right in the swim—a Modern Embroidery Exhibition is now open at the Victoria and Albert Museum, in London.

There is a distinct revival of all sorts of arts and crafts at the moment, and needlework is possibly the most popular of the lot. It is in a way a revulsion against the sameness of the old machine production, and it is already having its effect commercially by making industry pay more attention to variety and beauty of design.

But no matter how good a machine product may be, there are always people who prefer something which is hand-made. And as a visit to this exhibition will show, we are finding out new possibilities in needlework.

Not that the old work wasn't good. Even when they were merely trying to turn out something useful, our grandmothers often got on to a good thing. This was especially the case in the villages, and some of the old shawls, smocks, and other articles still preserved in country cottages are really beautiful pieces of work.

This is being revived now, and the village women of to-day are reviving these old crafts, with the encouragement of the rural institutes. There are about 5,000 village institutes which are interested in this movement, and county hand-work exhibitions are now being arranged, to prepare the way for a great national display of country crafts to be held in London in November.

The old craft of smocking will be one of those in evidence at these exhibitions. Smocks themselves are creeping back into favor—a number of women are realizing that they make very attractive overalls—and this process will be accelerated by the work of the institutes and he interest it will arouse. But smocking does not stop at smocks—it is being applied successfully to a number of other garments as well.

Another craft which the institutes are encouraging is carpentry, which is now being taken up by a number of women. Even in the villages women are breaking into what were once purely masculine preserves.

Basket-making is also proving popular, and skin-curling, fur craft, and glove-making all have their adherents. The gloves are made principally from sheep and lamb skins, and the skins of rabbits, moles, and hares are pressed into service by the workers in furs.

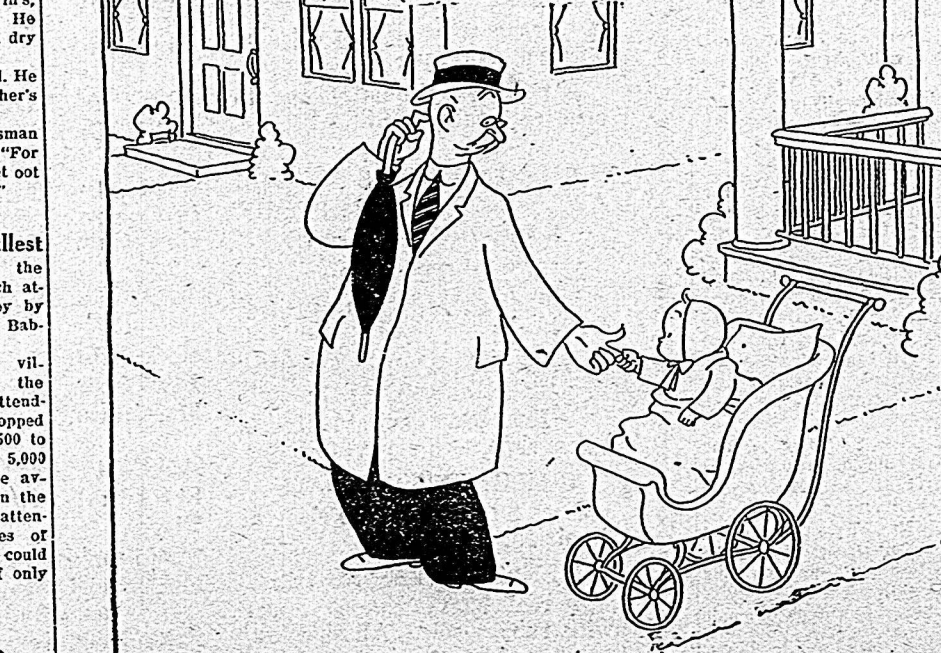
Canadians Walk More

Old as it is, the adage "It's an ill wind that blows nobody good" seems to hold true today, because they are not riding, people are walking, and that seems to be helping the boot and shoe industry. According to an industrial report there has been an increase of 10 per cent in the output of the leather footwear industry in Canada for the first quarter of the current year as compared with the corresponding period of last year.

During the first quarter of this year 4,990,513 pairs of boots and shoes were produced in Canada as against 3,991,810 pairs during the corresponding period of 1931.

Must Fit the Headlines Applicant—"Five come to take the examination for detective." Examiner—"All right. Let's see you look better."

DIFFICULT DECISIONS



THE BABY WITH WHOM YOU'VE STOPPED TO MAKE FRIENDS TAKES A VIOLENT FANCY TO YOUR FINGER AND YOU'RE FACED WITH THE ALTERNATIVE OF STAYING THERE THE REST OF THE DAY OR REMOVING YOUR FINGER BY FORCE WHICH WILL PROBABLY PRODUCE TEARS

GLUYAS WILLIAMS 4-5

Where Churches Are Fullest

The larger the community, the smaller the percentage of church attendance, according to a survey by that noted statistician, Roger W. Babson. Thus:

"In incorporated areas and villages under 2,500 population, the churches showed an average attendance of 71 per cent. This dropped to 66 per cent. in villages of 2,500 to 5,000 population. Towns of 5,000 to 10,000 showed an attendance average of only 46 per cent. In the cities of 10,000 to 50,000, the attendance was 42 per cent. Cities of more than 50,000 population could show an average attendance of only 39 per cent.

Azore Islands to Observe 500th Anniversary

Lisbon.—The five hundredth anniversary of the discovery of the Azores will be celebrated this month when the President of Portugal and some of the ministers visit the islands. The presidential party will be conveyed by several Portuguese warships and will arrive at the island of Santa Maria around the middle of August in celebration of the founding.