

FOR THE OPERATING ROOM—Here stainless steel makes it possible to keep surgical instruments spotless and ready for action.

divide into three major classes. Two of the major classes, cutlery-type stainless steel and 18-8 stainless steel, were developed by Harry Brearley and Benno Strauss, respectively.

The third major class is an alloy containing 16-30% chromium and a very small percentage of carbon. This type is between the cutlery type and the chromium-nickel type in its resistance to corrosion.

The metallurgists who discovered stainless steel were looking only for corrosion resistance. By adding chromium and/or nickel to the iron, however, they also increased the tensile strength of the steels.

Tensile Strength

The tensile strength of ordinary structural, sheet and plate steels is 50,000 to 60,000 pounds per square inch. Tensile strengths of stainless steels vary from 85,000 to 200,000 pounds per square inch. Through special treatment, stainless steel wires can get tensile strengths up to 350,000 pounds per square inch.

After its introduction through cutlery, the next large-scale consumer use of stainless steel came in 1930 when Henry Ford trimmed the radiators of his model A with the new metal. On today's auto, it gleams not only from the radiator, hub caps, running board, trim and headlights outside the car; but from the dashboard, lamp shells and door fixtures within the car.

There are hidden uses of stainless steel in the modern automobile. Looking inside the engine, you would find stainless steel guarding many "hot spots." It was chosen for these vital parts because it is outstand-

ing in its resistance to heat.

Stainless steel is more expensive than common steel, but it pays for itself in labor, paint, and maintenance costs saved by its use. On this week's cover of the SCIENCE NEWS LETTER a huge chemical vessel is spot welded. Fewer replacement parts are required when stainless steel equipment is used.

An example of this is the dairy industry. With poor cleaning and constant wetting, the pitting of carbon steel in dairy equipment was a serious problem. Frequent replacement of most equipment was required when ordinary steel was used.

The milk that is delivered to your door today almost never touches anything but stainless steel during its trip from the cow to you. Higher cost of the original equipment is more than offset because fewer replacements are needed and maintenance costs are lowered.

Another place where stainless steel pays for itself is in kitchen equipment. Stainless steel is not easily dented or chipped. It is easy to keep clean. It is not stained by food acids. Many factory, cafeteria and institutional restaurants, therefore, use stainless steel for kitchen and counter equipment. It is also being used more and more in home kitchens.

Other elements such as sulfur, columbium and molybdenum are sometimes added to stainless steel to give it particular properties. Molybdenum, for instance, improves the corrosion resistance of stainless steel used in the textile, paper and chemical industries.

Stainless steel has been used for architectural trim for both office and home.

Such famous buildings as the Chrysler tower and the Empire State are protected at key places by this metal.

Your home of the future may have stainless steel panels which will slide to make your rooms big or small as you desire. An architectural exhibit which opens in Washington this fall will feature such a home.

Samples of stainless steels, carbon steel, nickel and ferrochrome (iron and chromium melted together in an electric furnace) have been collected by Science Service. Several experiments you can perform with these metals are explained in a leaflet which accompanies the samples. Write Science Service, 1719 N Street, N. W., Washington 6, D. C., for one of these stainless steel kits at a nominal charge of 50 cents.

Science News Letter, June 18, 1949

SAFETY

Night Traffic Deaths Four Times Daylight Rate

➤ FOUR times as many deaths from traffic accidents per car on the road occur at night as during the day, the President's Highway Safety Conference was told in Washington by Edmond C. Powers, Street and Traffic Safety Lighting Bureau, Cleveland, Ohio. The increased night death rate is chargeable, he said, to defective tail lights, defective headlights, fatigue, fog, alcohol and inadequate visibility.

The four-to-one ratio of night to day deaths is the result of these six factors, he said, which not only increase the chances of accidents at night but which also increase the chances that a night accident will be fatal when it does occur. Inadequate street lighting, particularly in urban areas, is the primary factor.

The analysis presented by Mr. Powers was based on extensive research and detailed study of over 8,000 fatal accidents reported by 20 states for the year 1948. The analysis eliminates the accident factors which are the same day and night and thereby segregates those factors which apply strictly to night accidents.

On this basis, there were 13,800 night traffic deaths during 1948 in the United States due to the factors applying to night accidents. Of these, nearly 10,000 were due to inadequate visibility and 2,636 due to the use of alcohol. Fog was responsible for 516 deaths, and fatigue for 447. The others were due to defective tail lights or headlights.

Some 32,000 human lives were lost during 1948 from traffic accidents. Comparing the 18,400 persons killed in night accidents with the 13,800 killed in daylight is not particularly shocking, he said. But when it is remembered that night traffic is only one-third daylight traffic, and a comparison is made on the basis of the number of vehicles operating, the result is

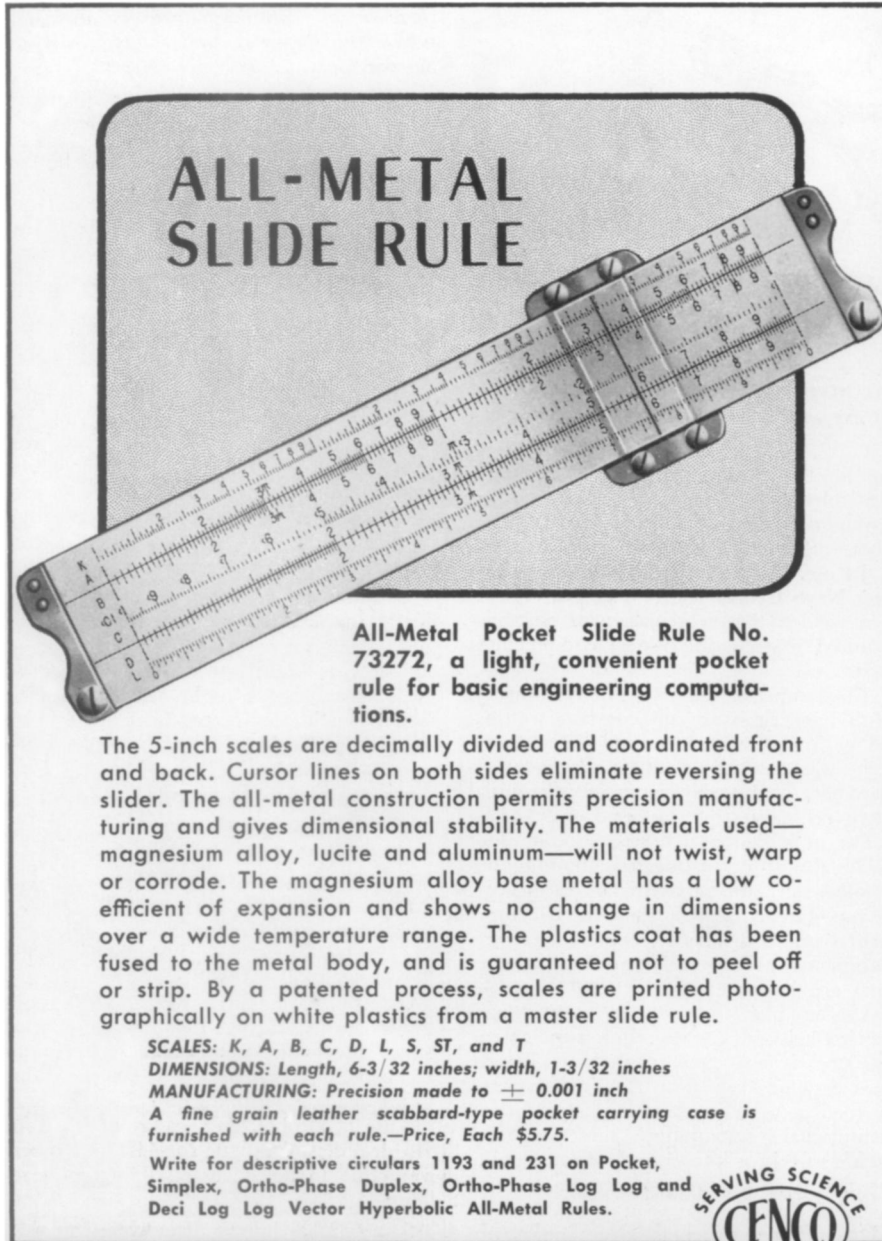
startling. Night deaths from the factors that cause daylight accidents would have been one-third of 13,800, or 4,600. The actual number of night deaths is four times this figure.

Inadequate visibility was the cause of 9,918 of last year's 18,400 night deaths, Mr. Powers emphasized. Inadequate visibility, however, contributed to the deaths from other factors, in his opinion. It increases the dangers of operating with defective lights, increases fog blindness, and it makes

the use of alcohol more apt to be fatal. The answer is better street lighting, and figures were presented to show that greater safety followed adequate lighting in various American cities.

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Scientists are attempting to develop a *dwarf sunflower* that will produce a seed high in oil content to add to the supply of edible oils; the dwarf plant is desirable as an aid to mechanical harvesting.



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MEDICINE

Synthetic Sex Hormone Prevents Miscarriages

► A SYNTHETIC female sex hormone can save women from miscarriage in 84 out of 100 cases if the miscarriage threatens between the tenth week and the fifth month of pregnancy. This means of saving lives of unborn offspring was announced by Dr. A. B. Abarbanel of Los Angeles at the meeting of the Association for the Study of Internal Secretions in Atlantic City.

Among patients in the same period of pregnancy who did not get the hormone, the saving of the unborn was achieved at the rate of only 40 out of 100 cases.

Even in the earlier period, up to the tenth week of pregnancy, the hormone treatment made a difference. In the untreated group the salvage rate was 20% compared to 35% for the treated.

The salvage is poor in the early miscarriages, Dr. Abarbanel thinks, because these are caused by blighted egg cells and disturbances in the tissues attaching the egg cell to the uterus as well as to a break in the continuity of blood vessels between mother and unborn baby.

After the tenth week the break in blood vessel continuity is the most common cause of threatened abortion, or miscarriage. Since the natural female hormone is the prime factor in maintaining this blood vessel continuity, Dr. Abarbanel thinks large doses of the synthetic hormone will "repair the break in the dike" and so prevent the loss of the baby.

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MEDICINE

New Medical Awards Go to Typhus Martyr's Associates

► THE first medals of a newly established national medical award were presented to the teacher and a co-worker of one of America's medical martyrs, Dr. Howard Taylor Ricketts.

Dr. Ludvig Hektoen, first chairman of the department of pathology at the University of Chicago, and Dr. Ricketts' teacher, received the first medal. Second of the medals, formally presented at the same time, went to Dr. Russell Wilder, head of the division of medicine at the Mayo Clinic. Dr. Wilder was working with Dr. Ricketts on typhus fever and after the latter's death remained in Mexico City to complete the work.

The Howard Taylor Ricketts award has been established by Mrs. Ricketts, widow of the man who was first to see the germs of Rocky Mountain spotted fever and of typhus fever and who died of typhus while studying the disease in Mexico in 1910. These and related germs are now called Rickettsia.

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