

than have been worn out. The work which kills at the present time is the abuse of work, the rush and strain of modern conditions, and, above all, worry, the curse of modern times.

"The person who works at hard manual labor has several advantages. As a rule, he labors in the open air, and provided that he earns sufficient to support himself and family in comfort he is free from worry and he is free from responsibility which usually brings worry in its train. Nevertheless, the brain worker must not lay the flattering unction to his soul that he possesses a monopoly of mental exertion."

## THE SMOKING AUTO

THE FAMILIAR injunction "no smoking!" is now to be extended to the public streets in New York, in application to the odoriferous automobile. The smoke-filter, invented in France, and described recently in these columns, has apparently not yet crossed the Atlantic. Says *Engineering News* (New York, October 6) in an editorial on the subject:

"An automobile emitting, as it passes, a cloud of disagreeable smoke is a familiar sight to any city dweller. In New York City this nuisance has been recently prohibited by the Board of Health in an amendment to the Sanitary Code. But it appears that little if any relief has resulted. In fact, an appeal which has just been made to the health commission by a committee of the National Highways Protective Society has brought out the information that in the three months elapsed since the amendment went into force, not a single conviction, nor even an arrest, has been made on the strength of it. And this in spite of the alleged fact that there has been in this city no noticeable diminution in the density and frequency of smoke from automobiles.

"In the gasoline engine, which supplies the motive power of by far the majority of automobiles in present use, the emission of smoke results from the combustion of lubricating oil in the cylinder. This burning of lubricating oil is not an essential feature of the regular operation, and in fact it has a somewhat deleterious effect on the engine. It is, however, a thing not always to be easily avoided, especially in the case of a comparatively new engine, which may require more than the normal amount of lubrication until its first stiffness has been softened by wear.

"There are, fortunately, mechanical considerations, such as the waste of oil and the fouling of piston-rings and spark-plugs with soot, which make the prevention of smoke of direct benefit to the automobile owner. For this reason, the percentage of automobiles that emit objectionable quantities of smoke is small.

"Just what relation automobile smoke has to the public health and why its regulation should be delegated to the health authorities we leave to our readers."

PURE RADIUM AT LAST—The announcement is made that Madame Curie and M. Debierne reported on September 5 to the Paris Academy of Science that they had at last succeeded in obtaining metallic radium. What has been called "radium" ever since its discovery is not the pure metal but some one of its salts, generally the bromid. Says *The Lancet* (London), commenting on the news:

"It is interesting to record that it is a little over a hundred years ago (1807) when a similar announcement was made in regard to the isolation of the two now familiar metals, potassium and sodium, by Sir Humphry Davy, and apparently Madame Curie and her colleague have isolated radium by the same agency, namely, electricity. They prepared an amalgam of mercury by the electrolysis of a radium salt. The resulting amalgam was next placed in a quartz tube and distilled in hydrogen under pressure and high temperature. The mercury was then found to have left a thin coating of brilliant metal behind which proved to be radium. As might be expected, the metal acts with great energy; it decomposes water, oxidizes rapidly in air, is attracted by iron as tho by some magnetic property, and burns paper when placed in contact with it. Radium is thus no longer a hypothetical metal."

## A BRITISH FLYING-SCHOOL

A PRACTICAL school of aviation is to be founded by the Aerial League of the British Empire in memory of Hon. C. S. Rolls, who lost his life recently in an aviation test. In a circular issued by the secretary it is pointed out that while such schools exist abroad, there are few opportunities in England where students may attend laboratory classes; also that there are no facilities, except for the rich, for learning the construction and handling of flying-machines or for testing selected designs of inventors. Says a writer in *Nature* (London, September 8):

"A subcommittee of the league has been at work for some time past upon the project, and their proposals (which have been approved by the executive committee) are as follows: (1) The primary aim of the school is to provide training in aeroplane manufacture and flight and to obtain a class of men grounded in the whole subject from beginning to end, the instruction to include such laboratory and theoretical work as funds and the gifts of apparatus may permit. The proposed laboratory to be situated centrally in London, to be open for the use of students from various technical institutions already providing elementary classes in the theory of flight, and also for public demonstrations in order to spread interest. (2) The school of aviation to be situated as near London as possible, and to be open to men who have undergone courses of training in great engineering schools, competent engineers, and mechanics. (3) The attention and the practical work of students to be chiefly directed to securing machines offering greater trustworthiness and stability, lower power and fuel consumption, diminished capital cost and expense of maintenance, and a higher factor of safety than the apparatus now used mostly in sporting contests. (4) In order that an early start may be made, two machines should be bought at once. Students themselves to build all further machines, and also those of selected inventors whose ideas are judged to be worthy of construction and practical trial. The result of this will be that novel machines can be built and tested at very low cost, and students, inventors, and instructors will alike benefit by the experience and analysis of results obtained. (5) Funds to be administered by an independent committee of management, including practical men of science and education experts."

The estimated cost of the school is \$6,500, and that of its running for the first year \$6,000; and the league "solicits the generous and prompt support of all sympathizers."

AN UMBRELLA PLANTATION—This does not refer to the ornamental shade-tree called in the South the "umbrella-tree," but to the cultivation of young trees for the special purpose of using them as umbrella and parasol handles. This, we are told in *Cosmos* (Paris, September 17), is carried on in France with much care and skill:

"Near Paris, between Versailles and Mantes-la-Jolie, at Maule, there is an industry as odd as it is little known. It flourishes in only two countries of the world—here and in Austria, near Vienna. This industry is the cultivation of umbrella-handles, canes, parasol-handles, alpen-stocks, etc., and in this small and charming locality nearly 200 hectares of land are devoted to this curious culture.

"Young trees are planted—ash, oaks, chestnuts, etc. At the end of some time, about a year, these are cut at the base in order to provoke the formation of several stems. Frequently these are deprived of their buds, to prevent the growth of lower branches that would form knots and there is left only a tuft of leaves at the top of the stem. At the beginning of spring these stems are forced to submit to veritable surgical operations, performed with special instruments, pincers and rowels, consisting in cutting the bark and engraving thereon varied designs—Grecian or spiral borders, etc.—which later will be found cut in the wood, after the removal of its outer coating.

"At the end of several years, generally three, these young trees are cut down. Each stem is stripped of all branches and after being thoroughly sun-dried is subjected to a steam bath. Then workmen, with great skill, strip off the bark, after which the cane is cut to the desired length and the handle is curved to taste. Sometimes certain stems are bent before the tree is cut,

to form ring-shaped handles, etc. To this end, several small branches are allowed to grow, and these are fastened together. In time these become grafted to the principal stem and form handles of the desired shape."

## A POWER-HOUSE ON WHEELS

ALMOST ever since the invention of practical electric motors, propositions have been made from time to time to install a miniature power-plant on an electric locomotive and run the locomotive with the electric current, thus making its operation independent of electric feeders and conductors. It has been continually pointed out by critics that to transform energy from the mechanical to the electric form and then back again to the mechanical involves a waste, and that unless it is possible to apply the power more economically to the wheels in the electric form, these successive transformations serve no useful purpose. It has been argued on the other side that this economy actually exists, and what has been named an "electric-turbo locomotive," using this principle, has just been built in Scotland, and has had preliminary trials on the Caledonian and North British railways. It remains to be seen whether it will live simply as a freak, like its predecessors, or establish a claim to usefulness. We quote the following description from *Railway and Locomotive Engineering* (New York, October):

"This long, strange-looking locomotive, with smoke-stack in the rear, cooler pipes in front, and the locomotive engineer and fireman in between, has just made its appearance in Glasgow, and has attracted wide-spread attention in railway circles. The steam is produced in its boiler, but instead of turning the driving wheels, it works a turbine which drives a dynamo, thus generating electricity for actuating the motors. The nominal power of the engine is equal to about 1,000 horse-power. The locomotive not being dependent on live rail nor wires can travel over any railway. It has been called the electric-turbo locomotive.

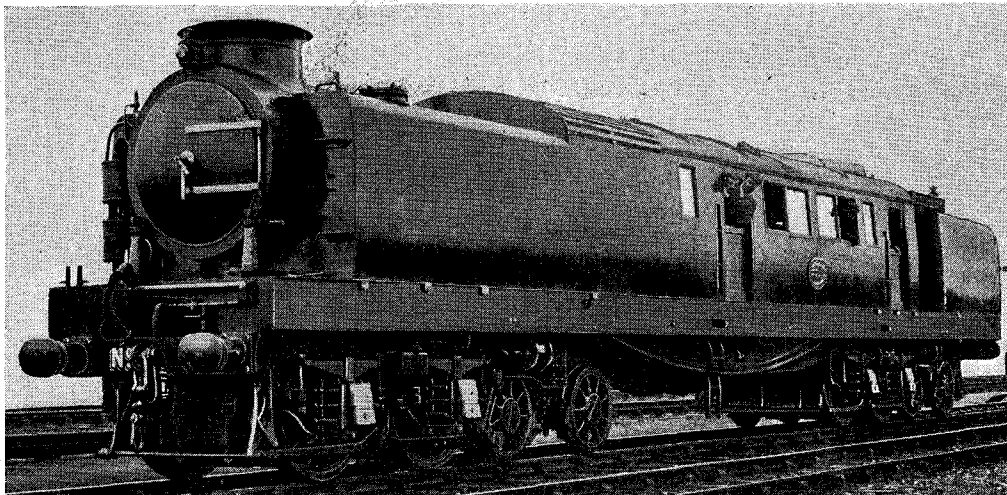
"Not long ago Mr. Hugh Reid, in his presidential address to the Glasgow Engineering Society, thus describes the steam-turbine electric machine, which is otherwise spoken of as the Reid-Ramsay locomotive. Steam is generated in a boiler of the ordinary locomotive type, which is fitted with a superheater, coal and water being carried in side bunkers and tanks. Steam from the boiler is led to a turbine of the impulse type, running at a speed of 3,000 revolutions per minute, to which is directly coupled a continuous-current variable voltage dynamo. This dynamo supplies current and pressures varying from 200 to 600 volts to four series-wound traction motors, the armatures of which are on the four main or driving axles of the locomotive. The exhaust steam from the turbine is condensed and eventually flows into the hot well carried on the engine.

"As the steam-turbine requires no internal lubrication, the water of condensation is free from oil, and can be drawn from the hot well and forced into the boiler as required. The water evaporated by the boiler is therefore returned again to the boiler, and is practically simply the vehicle used in the cycle of change where the energy in the coal is made to do the work of turning the wheels and so moving the engine and train.

"The condensation of the exhaust steam deprives the locomotive of the blast which stimulates the fire in ordinary locomotives. The forced draft is in this case provided by the use of a small turbine-driven fan. This fan is placed within the cooler which produces a circulation of air in the electric generators. The fan, therefore, draws cold air into the cooler and delivers warm air to the fire.

"The whole locomotive is mounted on a strong underframe and is carried on two 8-wheeled compound trucks, so built as to curve easily. The machine is intended for express passenger main-line work, and is really a traveling electric power-house on wheels.

"In concluding this description of the novel locomotive, we may quote Mr. Reid where he says, 'Most of the component parts of this steam-turbine electric locomotive have already proved themselves effective and efficient in other applications, and the novelty lies in the combination of the different elements of which the locomotive is composed. It is only when the attempt is made to substitute an electric for a steam-locomotive that we realize at what a very moderate first cost the steam-locomotive can now be produced in up-to-date establish-



By courtesy of "Railway and Locomotive Engineering," New York.

THE "ELECTRIC-TURBO" ENGINE OR ELECTRIC POWER-HOUSE ON WHEELS.

The rear end, with smoke-stack, is toward the reader's left.

ments with modern machinery and scientific organization in comparison with any arrangement involving the use of expensive electrical apparatus."

TO SHAVE OR NOT TO SHAVE—That is the question, according to *American Medicine* (New York), which calls it "the newest hygienic puzzle." Medical writers have held that the beard is likely to shelter bacteria, and some say the bearded man is more subject to colds for this reason, but the editor of *American Medicine* declares that "before advising men to shave, we would like to be convinced that it really has a beneficial result." Further:

"We would like to suggest that some one find out why beards were evolved at all if not for some beneficial purpose which women did not need. It is often said that sexual selection accounted for the matter, a beard in some way being more attractive to primitive women, and the possessors of bunches of hair had increased chances of securing mates, and that the beard may have had no other use or may even have been as burdensome as the enormous feathers of birds of paradise. Nevertheless mating generally takes place before the beard makes its appearance, and we must look elsewhere for the physiological reasons for its evolution.

"The purpose of the beard has some relation to a benefit in fighting and hunting which were about the only things man did at the time his face became differentiated from woman's. Whatever the benefit, woman in her more protected environment did not need it or was even harmed by a beard, and it is safe to say that modern men who do not hunt or fight and who are housed something like women, are as well off without beards or even better off. This much seems to be safe reasoning until we can find why Nature surrounded our mouths with bunches of hair to become smeared with everything we eat. For outdoor workers we would like to reserve judgment until the physiologists tell us why beards were evolved. This should not be a severe task, for the cause must have been potent to have made such a vast difference between the sexes. It is generally assumed that beards are still protective in some way and we would not like to accuse Nature of foolishness until we have the proofs, for we have never yet found her a fool."