

A FORTUNE in a TEASPOON

Madame Curie Controls the Most Valuable Trust on Earth

THE smallest yet one of the greatest monopolies in the world has been for years held fast in the hands of a woman—a poor woman.

It was a monopoly which weighed only a minor fraction more than one-tenth of a grain, so tiny that, had it been a mote in a sunbeam, it would have barely been visible to the naked eye, so powerful that it could smite with blindness those who looked at it too long, and with death those who treated it too carelessly.

The stock which that unique monopoly controlled was a source of constant light, continuous fire, inexhaustible force. Infinitely trivial in its amount, it could cure as it could kill.

It did more than the miracles hoped for in the most extravagant dreams of the ancient alchemists; where they sought to turn dross into gold, it made jewels of common crystals. Its mystery is as great as its power. It created fresh forms of life; it



Madame Curie, Owner of Half the World's Supply of Radium

made monsters; it perpetuated youth.

The owner of the smallest, yet greatest, monopoly has been, for several years, Mme. Sklodowska Curie, the discoverer of radium. The stock she monopolized was one centigram of the marvelous metal she had made which constituted one-half of the world's total supply of radium.

FOR years she possessed it, while radium was worth \$1,000,000 an ounce. And, during those years, she never used it to make a cent's worth of profit.

Instead, the only monopolist who strove to destroy her monopoly, she gave every aid in her power to enable the world of science to manufacture radium so cheaply that it could come into more general use.

Almost coincidentally with the discovery that the amount of radium she possessed could go on indefinitely turning common corundums into rubies, sapphires, emeralds and topazes has come the announcement that the Imperial Academy of Sciences at Vienna has so cheapened the production of radium that, from \$1,000,000 an ounce its cost has fallen to \$1,700,000 a pound; and nearly three grams—300 times the quantity that constituted Mme. Curie's stock—has been added to the world's store of radium.

The production of radium in anything like commercial quantities has not yet been undertaken, however, and Madame Curie is still in position to control the most valuable trust on earth.

Professor and Madame, Pierre Curie lived, ten years ago, modestly in their modest two-story home, with its small garden, at Gentilly, Paris, extremely southern outpost, overlooking the fortifications.

A TRUE WOMAN

The wife was a Pole, highly educated and as distinctly scientific in her tastes as the husband, whose labors were carried on in the Sorbonne. She was professor of physics at the high school of Sevres, where, later, her triumphs with radium brought her the degree of doctor of sciences. She had two children, a girl and a boy, because she was a woman of the kind who would not forfeit motherhood to science.

More than a century ago the German chemist, Klaproth, discovered the new metal, uranium, which he precipitated from an ore called pitchblende, mined at Joachimsthal, in Austria. That was in 1789.

Years afterward uranium proved useful in the form of an oxide for the coloring of highly expensive glassware, to which it imparted a beautiful fluorescence of a yellowish green tint. For twenty-five years the firm of Johnson, Matthey & Co., in London, made a specialty of extracting uranium from the pitchblende it imported from Austria, and paid three shillings sixpence per ton for the carrying away of the residue, after the uranium was obtained.

Many houses now standing in London have their foundations buried in tons of the pitchblende which Johnson, Matthey & Co. paid to get rid of. The time came when even the world of art and of commercial chemistry forgot the very existence of pitchblende as well as of uranium, for cheaper substitutes were found; and manufacturers of the beautiful fluorescent glass got along, cheaply and comfortably, without it.

It had always been observed that uranium gave forth continuous radiations, and interest in it revived, scientifically, when the X-rays engaged the attention of the scientific world. In 1896 Professor Becquerel, of France, accidentally learned that the phosphorescent salts of uranium, in absolute darkness, would produce a photograph as effectively as ordinary sunlight.

The Becquerel rays put science in a turmoil. Madame Curie, with her limited resources and purely from her



The Discoverers of Radium in Their Garden

own enthusiasm, tried quiet experiments, in the course of which she observed that some samples of pitchblende from which the uranium had been extracted—the waste stuff the London chemists paid to get rid of, the foundation dirt of so many London dwellings—were four times more radio-active than uranium itself.

It was unbelievable—contradictory of everything science knew about pitchblende and uranium. Now, the history of mankind has been that, when people see a thing which contradicts what they believe, they stick to their beliefs and discredit their eyes. That is why science is only a few generations old, why man is merely beginning to let machinery attend to the sweating of his brow.

Madame Curie, however, was one of those who would take her own sight against anybody's word for it. If her experiments showed that the waste of pitchblende was more radio-active than all the source of radio-activity that had been taken out of it, why, more radio-active it was, that was all. She left to science merely the honor of disagreeing with her, with science lucky to get even that.

Nevertheless—was it because she was a woman, after all?—she consulted her husband. He had the same preference for his senses over his opinions. He assisted in fresh experiments; and he declared she was right.

SPENT THEIR SAVINGS

After that, they labored together, with all the ardor of two exceptionally endowed students on the trail of some unknown discovery, which might prove small and might prove great, yet must prove to be a wholly new contribution to man's knowledge of his forever puzzling earth.

One thousand francs after another of their scant and carefully skimmed savings—savings such as the French alone know how to hoard by economy without meanness—vanished in their experiments. The pitchblende waste cost nearly nothing. But the processes through which they had to put it were expensive.

Suppose some one had dropped a spoonful of attar of roses in a small lake of water, or had scattered half an ounce of fine particles throughout the stones and ashes of the city dump. The barest, faintest ghost of a shadow of an echo of an odor might tell that the perfumes were there.

And then, suppose that you, disregarding what everybody else had known for more than a hundred years as

to the total extraction of all the perfume which had ever been in the lake or the dump, determined to extract, from either the lake or the dump, the last thousandth part of a drop of the rose attar or the last thousandth part of a grain of the musk! Well, that was the task the Curies, wife and husband, set themselves.

They boiled the waste pitchblende for days and days, with water and soda, over a slow fire. They emptied it into barrels and allowed it to settle into a mud. They washed the mud, and washed it again. Then they boiled it afresh, with carbonate of soda. They let the mud settle anew, and commenced afresh to wash it.

They treated the final sediment with hydrochloric acid, and secured a colorless liquid, which they subjected to a series of reactions and crystallizations, followed by refractions and re-refractions, until in the end they had several infinitely tiny flakes. And these were radium.

In the course of their experiments they discovered polonium, named for Madame Curie's native land, and actinium, as well as radium.

Long months were consumed in the work, and, when it was done, and when they were sure that some substance totally new to science and marvelously endowed with attributes which promised to revolutionize all accepted theories, they hesitated to disclose their triumph. There are some things which even wide-eyed science, ever eager to acknowledge the new and the strange, cannot bring itself to admit, unless the proof be overwhelming.

Yet, at last, they did disclose it, and all science did as they had expected. It gasped in astonishment; it doubted, it disputed. But it experimented, too; and then it instantly believed.

From the trivial to the marvelous, from the inconceivable to the all important, the discovery of radium passed almost in a single bound. Well it might. It was the one substance on earth which gave off heat, light and power continuously without the smallest trace of combustion, chemical change or diminution in bulk.

Professor Thomson's calculation was that a small bit of it might possibly lose 1-70 part of a grain in 1,000,000,000 years, although it must be shooting forth 2,500,000 particles per minute during every minute of the 10,000,000 centuries.

Its radiations killed guinea pigs within a few hours, and kept the larvae of moths in a perpetual youth, while generation after generation of the same family of moths went through the larva and chrysalis stage and up to



The Little Daughter of Madame Curie

mothhood and to death of the moth's old age.

It created life where no life could otherwise have come, by fecundating the eggs of the sea urchin and carrying them through the several stages of their development. It made weird monsters—as freaks of nature are termed in science—out of tadpoles; and it grew others as weird from toads' eggs.

It destroyed the germs of disease as readily as it destroyed the atomic theory. It created the new theory of ions, for it showed that the atom of hydrogen, supposed previously to be an indivisible unit, was composed of 700 smaller units, or ions, all in the most intense activity, yet held in bondage by some equally tremendous force.

And it promised the ultimate discovery of some means or agency by which these titanic, incalculable, super-human powers can be freed from their atomic bondage first, and harnessed to do the will of humanity later.

AN UNTIMELY TRAGEDY

Then, in the height of the glory that flowed upon them, when the famous French Academy of Sciences had awarded to them the La Caze prize of 10,000 francs, when the whole world of thought bowed before them in reverence, a careless Paris wagon driver ran down the husband and killed him.

It was thought that the accident, which deprived humanity of the high services of one of those two great minds, must crush the energies of the other. But Madame Curie, who had in her, before, the woman to balance the scientist, had in her now the scientist to protect the woman.

Those who had begun to agitate to secure for her a government pension, such as had been awarded Madame Pasteur, suddenly found there would be no need of the nation's aid, whether disguised as alms or as reward. She became a member of the faculty of the Sorbonne in her husband's place, the first woman professor in science that distinguished seat of learning has ever known. The bulk of the world's infinitesimal stock of radium remained hers—something which, in the beginning, a money-seeking owner could have converted into great riches—something which, toward the last, could have tilted scores of the jewels that delight other women's souls.

But Madame Curie's only aim was to let humanity, through science and industry, reap the harvest which should be most rich and most speedy. She has seen her wish gratified; while she has possessed, during the last few years, a monopoly that could have been held on the point of a knife blade, and could have been increased to a teaspoonful worth a million or more dollars, and to a handful worth more than the Steel Trust, she has made no effort to withhold this wonderful knowledge for the sake of personal gain, because she held herself more highly than all the wealth of the earth. She is what she was before, a trustee of science.

SCIENCE'S FIGHT AGAINST ALCOHOL

THAT there are many ways of combating King Alcohol has been shown by a recent proclamation to the public, issued by German scientists.

What is advanced with most positiveness is a campaign of education, rather than prohibition or local option legislation. Teach this generation the complete lesson of alcohol, the scientists argue, and the next generation will be composed of total abstainers.

PLANS urged for decreasing the use of liquors include greater care in their employment as medicine, keeping children from indulging in drink and inconspicuous but effective instruction in schools with regard to the existing spread of alcohol as a beverage.

It is proposed, too, to limit the drinking customs which tend to over-indulgence, especially the too intimate connection between alcoholic indulgence and society, as well as business.

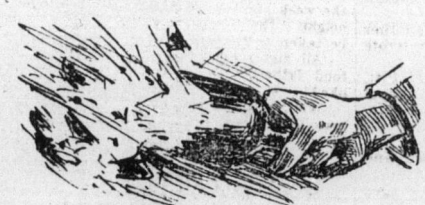
Negotiations for employment, payment of salaries, etc., should not take place in drinking houses. But the recommendations of these German students of the subject are not all negative. They have a good deal to do with the law of co-operation.

There should be greater facilities, they assert, for the serving of other beverages to the public, such as coffee, tea, milk, buttermilk and soups, at moderate prices, and good drinking water and hot water for extracts, etc., gratuitously.

Not only is the purpose to serve such non-alcoholic drinks in the crowded sections of a city, but wherever men congregate for the pursuit of trade or employment.

Serving depots, it is argued, should be established in connection with every large construction undertaking, such as the digging of canals, the building of railroads or any other great enterprise in which men are employed by the hundreds and thousands.

Of course, many men engaged in such work demand alcoholic stimulants and will not be content



with a substitute. To these, the German scientists argue, alcoholic liquors should be served only at working hours, and only up to a certain hour at night. If possible, such drinks should be served only in conjunction with food.

But the scientific movement to discourage drinking and place the world upon a total abstinence basis goes much farther. It has to do with the life and environments of the individual, because the opposing forces of content and discontent have, as a rule, a distinct and direct bearing upon a man's habits of life.

Improve the dwellings of the classes most likely to be caught in the grip of an alcoholic appetite is another of the methods these German scientists present to the consideration of the thoughtful world.

NEED A TOUCH OF NATURE

The idea seems all right. The brighter and happier and more comfortable a man's home is, the less he will desire to leave it, even for the attractiveness of the public house. So the students of this subject have decided.

Married men should have dwellings with gardens—even a little touch of nature in the home life works wonders. There should be opportunities for recreation and entertainment for the unmarried, or those not living with their families. There should be a constant aim for improvement in domestic life—instructions in cooking and housekeeping for girls; good reading matter always at

hand, and an encouragement of enlivening influences in the family circle.

Then, they say, it is an excellent thing to awaken an interest in the pleasures of nature. All sorts of outdoor excursions should be fostered; the establishment of public gardens, where only innocent pleasures and non-alcoholic drinks could be enjoyed, would go a great way toward solving the problem.

Communities should encourage social intercourse, the formation of clubs for educational purposes, and various forms of recreation that can be made popular without an alcoholic adjunct.

It is proposed to teach the alcohol-drinking world, among other things, the tendency of free, easy and continuous drinking toward impoverishment. This, perhaps, will be one of the most difficult tasks before the German scientists.

But, in addition, the war plans aimed against King Alcohol contemplate an additional arousing of interest in the pleasures of nature. People living in cities should take advantage of all means offered for excursions elsewhere; they should cultivate a liking for public gardens and parks, for outdoor exercises and games, and all kinds of healthy sports.

Social intercourse, lectures, the formation of clubs for educational purposes and visits to art galleries, museums and industrial establishments are all suggested as means by which the alcohol thirst may be combated.

In other words, if the mind is enlisted in activities that absorb and interest every leisure moment, there will be less demand for stimulants.

Prohibition of the sale of liquor to minors, to those intoxicated and to habitual drunkards is urged. Lapses should be treated with severity.

The treatment of drunkards should consist in an absolute abstinence from alcohol, which is facilitated by a treatment in an asylum. The creation of abstemious surroundings for family and club guarantees a safeguard against the influence of daily intercourse and mutual work.

For incurable drunkards, the scientists can only recommend proper asylums. But they believe few need drift into such asylums, if the subject is handled in a scientific manner.

Some Curious Facts and Fancies

ONE of the most remarkable freak newspapers ever printed was the Luminaara, published in Madrid.

It was printed with ink containing phosphorus, so that the paper could be read in the dark. Another curiosity was called the Regal, printed with non-poisonous ink on thin sheets of dough, which could be eaten, thus furnishing nourishment for body as well as mind. Le Bien Etre promised those who subscribed for forty years a pension and free burial.

A Russian does not become of age until he is 25. The first photographs were taken in England in 1839. In Australia there are nearly 24,000 more men than women.

London uses 50,000 tons of sugar annually for jam-making. For every ton of gold in circulation there are fifteen tons of silver.

As a rule a man's hair turns gray five years sooner than a woman's.

The average amount of sickness in human life is nine days out of one year.

Germany sends 25,000,000 feathers per year to England for millinery purposes.

The coal consumption per head is greater in England than in any other country. It requires fifty pounds of candle to produce as much light as 1600 cubic feet of gas.

The average life of a woman is forty-four years, and that of a man forty-one years.

A small student has ascertained that it takes the little creature fourteen days to travel a mile.

Special clocks, which need winding up only once in 400 days, are now manufactured in Munich.

France imports about 170 tons of human hair every year, and about 100 tons of it comes from China.

The temperature of countries with sandy soils is higher than those with clay or other compact soils.

For penknives the steel is tempered at 470 degrees, for tableknives at 530 degrees, for saws at 560 degrees.

Frequent use of the microscope is said to prevent near-sightedness. Watchmakers are seldom afflicted with it.

High heels, it is said, owe their origin to Persia, where they were introduced to raise the feet from the burning sands.

Organ grinders in Vienna are not allowed to play in the morning or evening—only between midday and sunset.

The tip of the tongue is the most sensitive part of the human body; the tips of the fingers come next, and third the lips.

Of a million girl babies born, 871,336 are alive at twelve months. Of the boys, 33,000 fewer live through the first year.

The Japanese lover, instead of an engagement ring, may give his future bride a piece of beautiful silk to be worn as a sash.

The larger kind of West Indian firefly gives a light so brilliant that by its printed matter may be read at a distance of two or three inches.

Every soldier in the Russian army is to be provided with a pocket compass with a luminous needle, and 300,000 compasses, costing \$400,000, have already been ordered.

The teredo, or shipworm—which, in the days when vessels were made of timber, was responsible for more disasters than any other cause—is now threatening the Canadian timber trade.

What is reported to be the largest apple tree in the United States is in the garden of Charles T. Waterhouse, at Southington, Connecticut. It yielded fifty bushels of apples this season.

Red seems to be the most popular of national colors, if flags are to be used as criterions. Of the twenty-five leading national flags, nineteen have red in them. The same cannot be said of any other color.

Denmark's kings for centuries have all been named Christian or Frederick. It is the law that Christian must be succeeded by Frederick, and Frederick by Christian. To attain this every Danish prince, no matter what other names he may receive, always includes Christian and Frederick among them.

In some parts of West Africa the girls have long engagements. On the day of their birth they are betrothed to a baby boy a trifle older than themselves, and at the age of 20 they are married. The girls know no other way of getting a husband, and so they are quite happy and satisfied. As wives they are patterns of obedience, and the marriages usually turn out successful.

White Oak Leads Hard Woods

WHITE oak is one of the most widely distributed and commercially important trees of the United States, and its total annual product of over 2,600,000,000 feet of lumber is more than double that of any other hardwood.

The wood is compact and close grained, hard, tough, strong, heavy, and durable in contact with the soil. By a peculiar mode of saving by which the boards are cut nearly parallel to the pith rays, the silver grain is shown, furnishing the handsomely figured panels, ceiling, and molding of "quarter-sawn" oak.

White oak is the favorite timber for railroad crossties, and of the 30,000,000 ties purchased each year nearly one-half are of oak, the greater part of which are white oak. It is also an ideal material for tight coopers, cooperage manufacture. Other uses are for car stock, boards, planking, beams, dimension stuff of all sizes, ship building, tool handles, wagon spokes and furniture and basket veneer.

Red oak and black oak exceed white oak in rapid growth and early maturity, but the latter has a marked advantage in its greater ability to withstand shading, in its longevity, and in its inherent resistance to decay, insects and fungi.

A Woman's Work for Nurses

THE women who compose the National Association of Army Nurses of the Civil War will watch the work of the present Congress as eagerly as will those who anticipate some sort of financial legislation.

Once more the pension committee of the association has taken up the work of endeavoring to have passed the bill placing the volunteer nurses upon an equality, in the granting of pensions, with the regularly enrolled nurses, who are pensioned under the act of 1892.

There has been no more active worker in behalf of this measure than Miss Kate M. Scott, of Brookville, Pa. During her ten terms of service as secretary of the National Association of Army Nurses, Miss Scott has labored day after day, year after year, in behalf of the heroic women who followed the flag in many campaigns, and who were angels of mercy during the dark days of war and suffering. As national secretary, she has exerted herself to rally the friends of the nurses to the support of the pension measure.