

BY JOHN MILLS.

Illustrated by WARWICK GOBLE.

many noble but impoverished matrons with unmarried daughters.

He had a luxurious crop of fiery hair, a pale face, and a very long, sharp nose—a nose denoting something extraordinary in his character. His legs were not straight lines, they were arcs of circles, regular geometrical curves enclosing a space which, as Euclid tells us, two straight lines can never do. George while at college was as erratic as a comet. He never could submit to the constraint of routine, and move around those shining lights, the professors, as a planet moves round the sun; so, like an erratic comet, he glanced off at a tangent and rambled at his own sweet will in the illimitable byways of science.

He wore no appendage at the end of his name, although he remained at Cambridge seven years! When he came away he left the degree behind at the university to wait till called for. George always declared that he didn't care a rap for degrees; it was like ticketing good, bad and indifferent cloth all at one uniform price, and he didn't care to be labelled in that way.

"Degrees, my dear Wilson," he used to say, "are all very well in their way, you know, and no doubt they are very useful to lots of fellows; but they are not brains, and



LKNEW George Stanford as a pensioner at Cambridge University. While I was delving deep into the mysteries of jurisprudence he was groping his way in the dark domains of research in the Cavendish Laboratory. George was not exactly handsome; one can only say that he was bi-polar, like a magnet; he attracted and repelled at the same time. His open-handed liberality, good fellowship, and versatile conversation—for he was a brilliant and effusive talker—formed an irresistible combination of attractions to those who, like myself, knew him intimately, while a peculiar disposition of his eyes, which rendered the object of his gaze problematical, often at first sight proved repellent. He was no great favourite with the fair sex, in spite of the fact that he was the sheet-anchor of

in this world of jealously-guarded self-interests I think brains will serve me better than a degree."

We were in the smoking-room of his house, or rather mansion, at Malcomdene, and were seated in wicker chairs puffing out blue wreaths of smoke in contented silence before a small table on which were glasses and decanters. Overhead hung a triplet of incandescent lamps, the mellow radiance of which encircled us like a halo on that murky November night.

It was my custom to thus spend one or more evenings a week with my old college chum, and as George was a great talker and I a pretty good listener, the mutual bond of friendship between us grew stronger as years rolled on. Among the millions of inhabitants of this world there are too many talkers—miserable triflers—and far too few listeners. But I never found that I was the loser by cultivating the appreciative qualities of a patient listener while under the spell of George's entertaining conversation, and consequently I naturally enough gravitated to his fireside in my spare moments.

It would however be an injustice to my friend to let it be supposed that he talked merely for the pleasure of hearing the sweet music of his own voice, or that he was at any time so weak as to descend to the low level of a mere twaddler. George Stanford was a genius in his way, and had ideas. It is to trace the development of one of his ideas that I pen these lines.

I should explain that my host, a bachelor, was a man of unusually large pecuniary resources, who spent his time and substance, and amused himself at the same time, in all sorts of odd schemes for increasing his wealth; but it sometimes turned out that while he secured an agreeable pastime the emoluments were a negative quantity—a good deal less than nothing. Yet all these, to him, trifling losses were but as a pinch of salt, a condiment to a wholesome dinner, compared with one or two tremendously big hits which he made during his lifetime.

My friend, though a desultory and empirical sort of dabbler in science, was in possession of a surprising amount of out-of-the-way knowledge of a practical kind, and for a subject to interest him it must always have some utilitarian aspect.

"By the way, Wilson, do you happen to know Pictet, of Geneva, and Cailletet, of Paris?" said George, breaking the silence.

"Never even heard their names before!"

"Ah! of course. I forgot you don't dabble in chemistry. What a pity!"

"I have no particular liking for the subject, and indeed I get on well enough without it. But what of these men, Pictay and Kailatay, as you call them?"

"Well, as I was going to tell you, these foreigners once put me on the scent of something which I thought would turn out to be a mine of wealth—a veritable El-dorado."

"Oh!"

"Ay; a fabulous fortune stared me in the face—came home to my very door and looked in."

"You don't say so, George! Then why didn't you slip outside and push it indoors?"

"I might just as well have tried to force a camel through the eye of a needle."

"Really! Pictay and Kailatay must have been awfully dense, I should think, to give themselves away like that."

"Dear me, no! I didn't mean that. But I ought to have told you that I conceived the idea by reading Pictet and Cailletet's writings. See?"

"Oh! it wasn't an actual gold mine then? Only an idea!"

"That's it! An idea—an idea!"

"Hum! But of course, now I think of it, ideas are just as good as nuggets of gold sometimes. Did you make anything out of it?"

"A great deal more than I bargained for, I can tell you," said he, as he leisurely refilled his pipe from the tobacco jar on the table.

"Help—self—cigars. I like—pipe," said he intermittently between the puffs as he lit up. "Make yourself comfortable and I'll tell you a story embodying one of the most remarkable incidents in my life."

I knew in a moment, by the twinkle of his eyes and the blissful smile upon his face, that there was a treat in store, so I roused myself and prepared for what was coming. I give the story as nearly as I can in the exact words which passed between us, and its plausibility or the reverse must therefore be reckoned to him. Truth to tell I used to half suspect sometimes that he took advantage of my ignorance of things scientific merely for the sake of diverting himself. Still I am by no means certain of this; neither indeed do I greatly care, for his stories beguiled the time pleasantly enough, and that was all I wanted. He was altogether too hard a nut for me to crack, and to catch him napping one would have needed the faculty to see round a corner.

"Now, Wilson, listen to my tale," said Stanford as he sat back in his chair, one

leg thrown over the other. "Pictet and Cailletet, those two foreigners we were talking about, have shown us how to transform the air we breathe into a liquid and even a solid on a small scale, but so far as I know they never made any practical use of it. You know, Wilson, I always like to take advantage of new discoveries and make money out of them. I've told you that before, many a time?"

"So you have, and I think it is a very proper attitude. Personally I can't see any sense at all in spending time and money on such mental gymnastics unless the products are to be of use to somebody."

"Well, when I first heard the news—it is a long time ago now—I at once began to con over in my mind ways and means for doing on a large scale—by the ton in fact—what these men had done by the fraction of an ounce, and I succeeded even beyond my most sanguine expectations. As a matter of fact I manufactured solid air, as ice is made commercially, and I turned it out in quantities such as Pictet and Cailletet probably never dreamed of."

"That's the grand idea then, is it? The atmosphere is your fabulous gold mine—your El-dorado?"

"Certainly! Why not?"

"Oh, don't ask me, George. If you say so I am content; but I see no sort of market for such commodities, and a market is indispensable if you're to make a commercial success out of it. Anyway that's my notion of business."

"You might just as well say: 'Solid ice! Of what use can it be?' Air, my dear Wilson, is just as essential to life and its needs as is water. But of course your question is quite natural, and it's the very same that I put to myself. You see when I'd got the stuff I was just in the same fix that you're in now, I didn't know what to do with it; but I put my thinking cap on and an idea came in a little while, and more followed quickstep on the heels of one another, so that in almost no time I had quite a family of them!"

"Draw it mild, old fellow!" I remarked.

"Bless you, there is nothing like ideas for breeding!" he replied. "The fecundity of ideas is something tremendous! If you've got one idea as a nest egg to start with you may raise up a whole community directly."

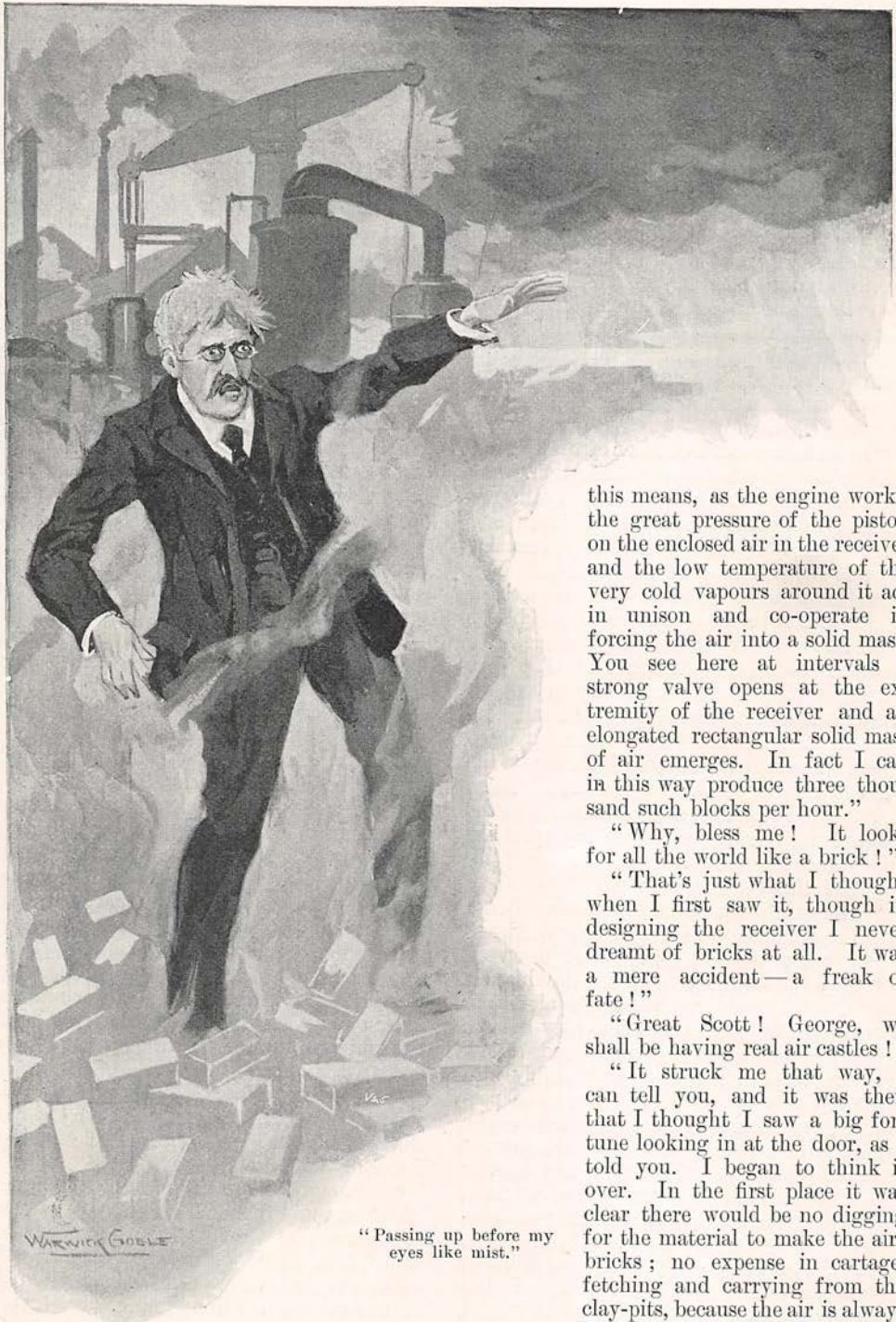
"Well I never had much to do with ideas. You astonish me. But I'm only a plain formal lawyer, and so can't be expected to know these things."

"I started at the beginning, thus: Solid air is very cold, extremely cold, and the first inference was that if a quantity of ice, on account of its cooling properties, would serve some useful purpose, then a much smaller bulk of solid air, at a temperature of about 140 degrees below that of the ice, would serve as a substitute for the ice. See?"

"Clearly: that would be a distinct advantage; it's getting the full value of the cooling properties into a smaller space, like exchanging twenty shillings for a sovereign. I understand."

"Well then it was pretty plain sailing for certain adaptations of the solid air in place of ice. All I had to do was to have it moulded into the form of small pellets as a cooler for all sorts of drinks. Instead of having your tumbler half filled with ice you put in a pellet of solid air. You see it's neater, handier, and altogether more in keeping with advanced civilisation than the old-fashioned way. Just fancy the way in which ice-venders tug and sweat and swear over the unwieldy and slippery blocks of ice which they deliver at restaurants and shops! All that has become ancient history to me. Then you must understand there is a vast storehouse of material for which there is nothing to pay, not even taxes. Air is always accessible without the construction of reservoirs, pipes, and the like. Then again, it would be a great convenience to millions of people to have a seaside atmosphere packed up and brought to their homes by carrier or by parcels-post. You might have air from the sunny South, and air from any climate whatsoever, charged with varying proportions of ozone, for the use of invalids. Its use in this way would be something after the fashion of putting sea-salt in your bath to get the advantages of sea-bathing at your own home. As a household commodity in summer its use can scarcely be over-estimated as a butter cooler, preventive of the putrefaction of meat, and so on. But curiously enough the most extraordinary idea was forced upon me one day without any effort on my part. As often happens in research work, while you are looking for one thing you are apt to stumble across another.

"Now look at this," he continued, reaching down a photograph from the mantelpiece; "it is a view of the enormous engine and other accessories by means of which I manufacture solid air. Here is a receiver into which the air is forced at a tremendous pressure, many hundred atmospheres, and these pumps, communicating with monster



"Passing up before my eyes like mist."

this means, as the engine works, the great pressure of the piston on the enclosed air in the receiver and the low temperature of the very cold vapours around it act in unison and co-operate in forcing the air into a solid mass. You see here at intervals a strong valve opens at the extremity of the receiver and an elongated rectangular solid mass of air emerges. In fact I can in this way produce three thousand such blocks per hour."

"Why, bless me! It looks for all the world like a brick!"

"That's just what I thought when I first saw it, though in designing the receiver I never dreamt of bricks at all. It was a mere accident—a freak of fate!"

"Great Scott! George, we shall be having real air castles!"

"It struck me that way, I can tell you, and it was then that I thought I saw a big fortune looking in at the door, as I told you. I began to think it over. In the first place it was clear there would be no digging for the material to make the air-bricks; no expense in cartage, fetching and carrying from the clay-pits, because the air is always here. I saw too that there would

reservoirs containing volatile liquids, draw off the intensely cold vapour into this steel jacket which surrounds the receiver. By

be little expense, comparatively speaking, in the plant; nothing but a powerful engine to work the pumps, and the bricks could be

pushed out *ad infinitum*, and would only require piling up in the brickyard. Then the volatile liquids for producing the necessary low temperature could be used over and over again, with scarcely any waste, as they could be condensed after use and returned direct to the reservoirs. Understand?"

"I can only say that it is simply and truly marvellous!"

"Do you know, Alec, I never could forgive myself for being so dense as not to have foreseen this remarkable result, unaided by chance. It's galling to me when I think that the sight of that brick-like solid put me on the track. But I always do put things in their true light, and never annex anything, as the result of my own ingenuity, which drops down on me as from the clouds in that way."

"It certainly does rub some of the gilt off, but for all that it's a clever conception."

"I'm glad you think so, for I am not insensible to those feelings of affection and pride which a man generally entertains towards the offspring of his intellect. You must understand however that something remained to be done before those bricks could be of any use as building material. In the first place they were so cold that they burnt you like red-hot iron when you touched them, at least the sensation was the same. I can't explain it. It's one of nature's paradoxes. Again, the bricks took a fancy to the habit of growing beautifully less and less and finally lifted themselves back again into the atmosphere, passing up before my eyes like mist before the rising sun."

"Ah! that's awkward."

"Awkward indeed; but I got over it. I found a substance, which I named 'bindene,' which, when dissolved in water, possessed the properties of a cement in the highest degree, as I found that when the air-bricks were immersed in this solution they became as hard as adamant, and rang and struck fire like steel when brought forcibly into contact with stone or flint. So you see permanence of form was thus imparted to the bricks, and I may tell you that the constituent molecules were so firmly locked together by the bindene that the restoration of these products of solid air to the normal temperature did not in the least affect the form of the everlasting bricks, so durable indeed that they would have defied the ravages of time."

"George, old man, you're a genius!"

"Well, that's as it may be. When I found that I—one man, one machine, you know—could manufacture 30,000 air-bricks in the

course of a ten-hours' day, that I could teach the most unsophisticated to work the machine, and that there was practically an unlimited source of material gratis and always ready to hand, I began to view the invention as a thing of the highest commercial importance, and I accordingly set to work, and for a while I turned the bricks out at a great rate. You see I had the field—a world-wide one, understand—all to myself, and my point was to make a large quantity before the invention became known, because, although one may in theory protect himself, there are, in fact, always pirates enough and to spare nevertheless. So, as I say, I went in for quantity at the start and made millions, and mind you, Alec, there's a lot of air in an air-brick."

"I hardly know what to make of it; but I should think if, as you say, the air is so compressed as to strike fire like steel, it must be pretty closely packed. Are you still carrying on the business?"

"No; I found that in the interests of humanity it was my duty to forego that source of income. You know I have always made it a rule—a rule which I hold as sacred—never to encroach on the rights of my fellow-men, never to live on other people's losses. In the struggle for wealth my rule is to fight fair."

"Very laudable principles; but really—come now, in what way could your brick-making be detrimental to others?"

"Well, my dear fellow, there are more ways than one in which that question could be answered. At the time I speak of there was a very heavy rainfall, which proved most disastrous to the crops of that year, and ruined hundreds of farmers and others engaged in fruit culture, and the newspapers were teeming with mournful prognostications for the future. Speculating on the probable cause of this second deluge, some attributed the excessive rainfall to the large number of spots on the sun."

"Stop, stop, please! What are you driving at? Rainfall! Sunspots! What have these things to do with brick-making? What do you take me for?"

"I thought I was telling you. Of course it's a long way round, but I want to tell you the story just as it all happened to me. Well then, as I was saying, they tried to make out that the rainfall was all the fault of the sun-spots. Why, Alec, our Government makes a regular grant of money for the study of the connection between sunspots and the weather, and although it is known that some sort of relation does exist

between these phenomena, they can't exactly predict the sort of weather we're going to have. But it is all done with the object of assisting agriculturists. In this particular year that I speak of nobody could make head nor tail of the affair, but as it was the general topic of conversation I began to interest myself in it. One day, when things were at the worst, the village parson came to see me, and he was in an awfully agitated state.

"'Oh, Mr. Stanford,' he burst out as soon as he was shown into the library, 'it's shocking!' and then sank into a chair like one demented.

"'What's shocking?' I asked in amazement.

"'My parishioners will be ruined—impoverished! This disastrous weather is driving me mad. Don't you know farmer Sansom has committed suicide?

"'You astonish me!'

"'He has—this very morning. Bankruptcy and utter ruin were staring him in the face, and he has ended it all in that way!'

"'It is sad, very sad. What's to be done? Can I be of any use to you, Vicar?'

"'Oh, thank you, Mr. Stanford, you're always ready to help! In truth I called with the express purpose of asking for a small contribution to the relief fund which I have organised for the distressed in the parish.'

"'Name the sum you think necessary.'



"They came out like red-hot blocks of iron."

“Well, let me see. There are seventy-five families in immediate want of food, which, at ten shillings for each family, will represent some thirty-eight pounds; then there are many others who can't hold out long; so to be in readiness I shall require about twenty-five pounds. Then there is the reserve fund, for which heaven only knows what will be required! Might I say five hundred pounds, Mr. Stanford?”

“I will give it cheerfully,” said I, and took out my cheque-book and wrote off the amount.

“When he was gone I pondered over the sad news of Sansom's death and the general distress—which, by the way, was not confined to this parish. It was a year of agricultural depression all the world over, the far-reaching evil results of which it would be hard to trace out. After a time I remembered that a low barometer means, in a general way, a heavy rainfall, and I therefore began to note the daily readings. I continued to make air-bricks as fast as ever, and was struck dumb with amazement to find that the daily fall of the barometer, was exactly in proportion to the number of bricks that I made. It dawned upon me all at once that I was the unconscious agent of all the distress of that unhappy period! Can't you understand that the air I had removed from the atmosphere would appreciably alter the weight of the entire envelope of air around the globe, and so reduce the height of the barometer? Well, the air had thus become so thin and attenuated that it wouldn't hold up the watery vapour, which consequently came down as a deluge of rain and ruined all these poor families.”

“Well, what did you do then?”

“Do? Why, I did what I ought to do. I stopped the machine forthwith and set about devising means for restoring the air to its normal condition. But imagine my consternation when, with all this distress and death weighing me down, and remorse gnawing at my heart, I was confronted with what seemed an insuperable difficulty of my own making?”

“What was that?”

“Why, the bindene had imparted a hardness to the air-bricks which stubbornly resisted all attempts at turning them back again into air!”

“Ah! that was hard lines, George.”

“Hard lines! It was that and a good deal more. It cost me a fine penny, I can tell

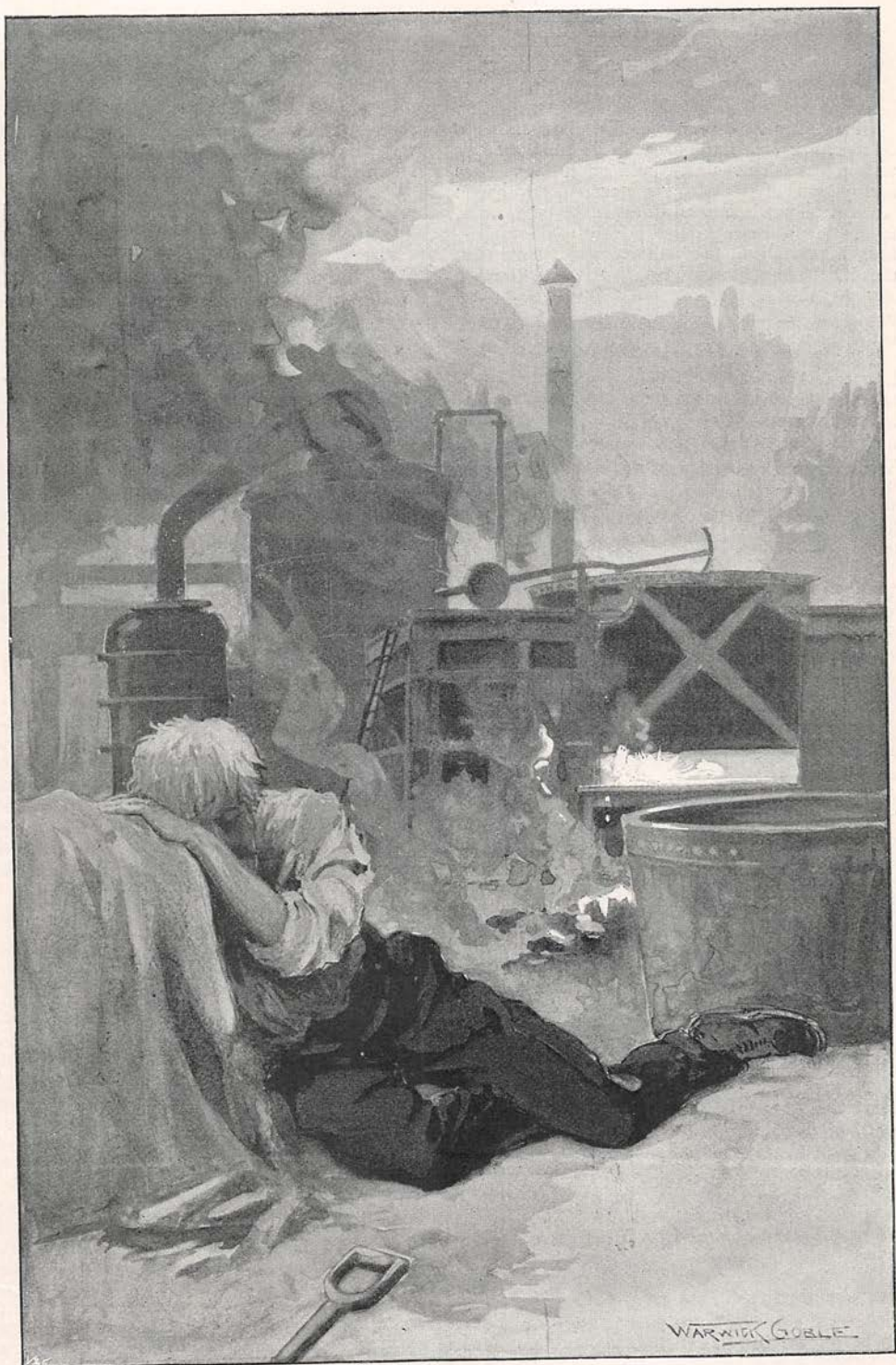
you! Why, I tried all sorts of solvents—acids and alkalis, and I don't know what—to dissolve out the bindene, but they failed utterly. Then I tried heating the air-bricks in a furnace, but they came out like red-hot blocks of iron, totally unchanged. What was I to do? I was at my wits' end. Curiously enough, when I was almost consumed with despair, an idea came. I made a strong solution of the bindene, and to my intense relief I found that an air-brick, after soaking in this strong solution, lost all the adhesive property which the bindene had given to it. Then nothing remained to be done but to dissipate the air in the whole of the air-bricks as quickly as possible, and I tucked up my sleeves to the work in earnest. Of course, after soaking—no mean task, bear in mind—the bricks began at once to evaporate, but to expedite the process I had a large iron plate heated to redness over a furnace, and as the bricks were placed on this they disappeared like rapidly melting snow-flakes, keeping up a regular roar like a whirlwind all the time. As I didn't care to let the parson know that I was the cause of all the distress of that memorable year, and indirectly the murderer of farmer Sansom, I kept the affair to myself and worked at undoing the mischief, as far as lay in my power, by keeping at the furnace day and night for weeks, snatching a few hours' sleep at intervals when I could hold out no longer. I couldn't tell you the pleasure I felt as I saw the barometer steadily rise day by day. Up, up it went, approaching nearer and nearer its normal height as the great piles of bricks diminished, and my eye eagerly turned again and again from the one to the other. When the last brick was placed on the hot plate I dropped down just where I was in complete exhaustion and slept by the side of the furnace for I know not how long. After that there was no more rain to speak of for three whole months.”

“You saved the crops then, George?”

“Alas, no! but I saved the world!”

“Saved the world? How do you make that out?”

“Well, had I continued making the air-bricks here, and set up other machines for the same purpose all over the country, you will readily see that in no great length of time the air would have become so thin or attenuated that no one could have breathed with comfort, and thus the human race would have been slowly exterminated.”



"I dropped down just where I was."