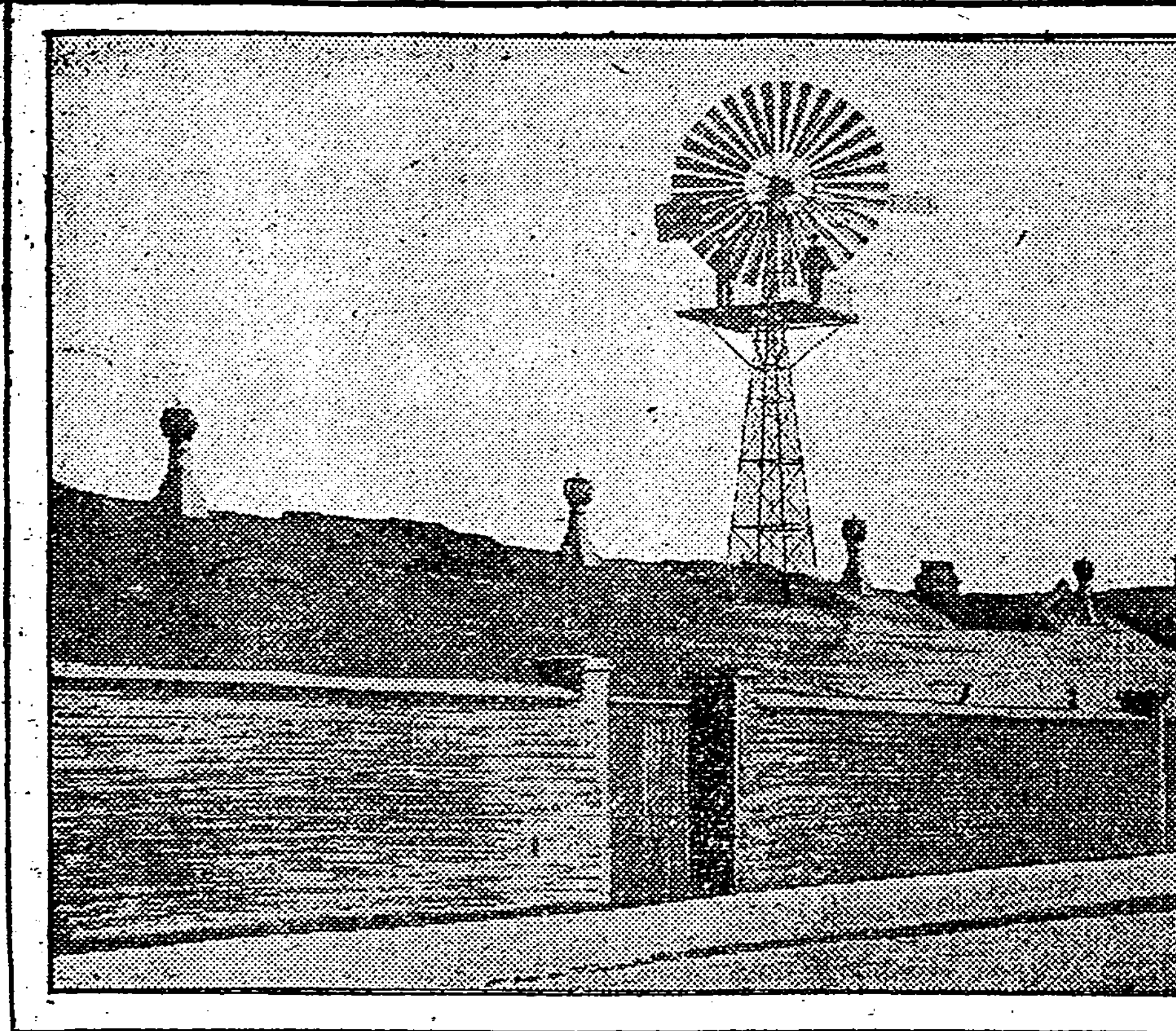


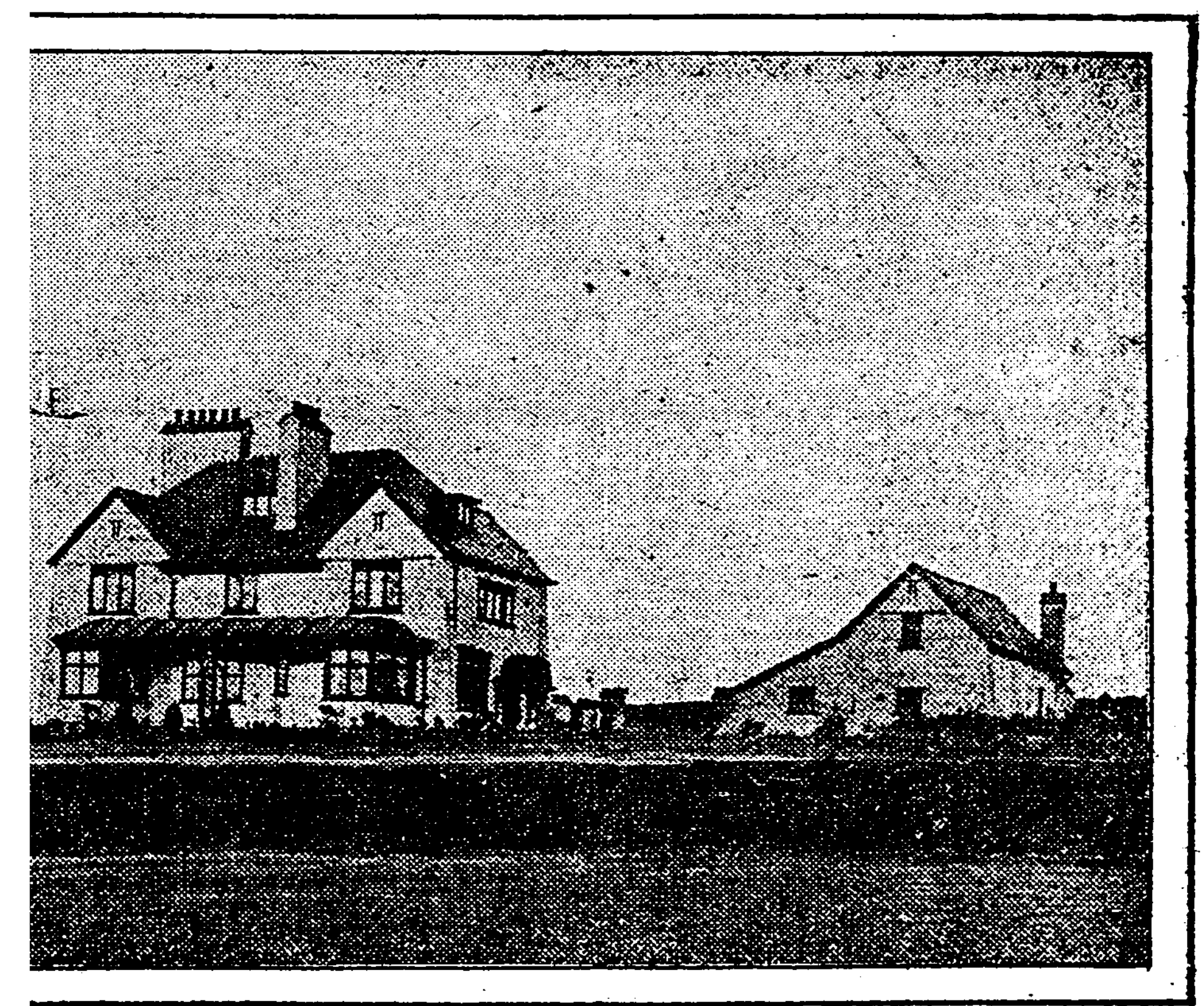
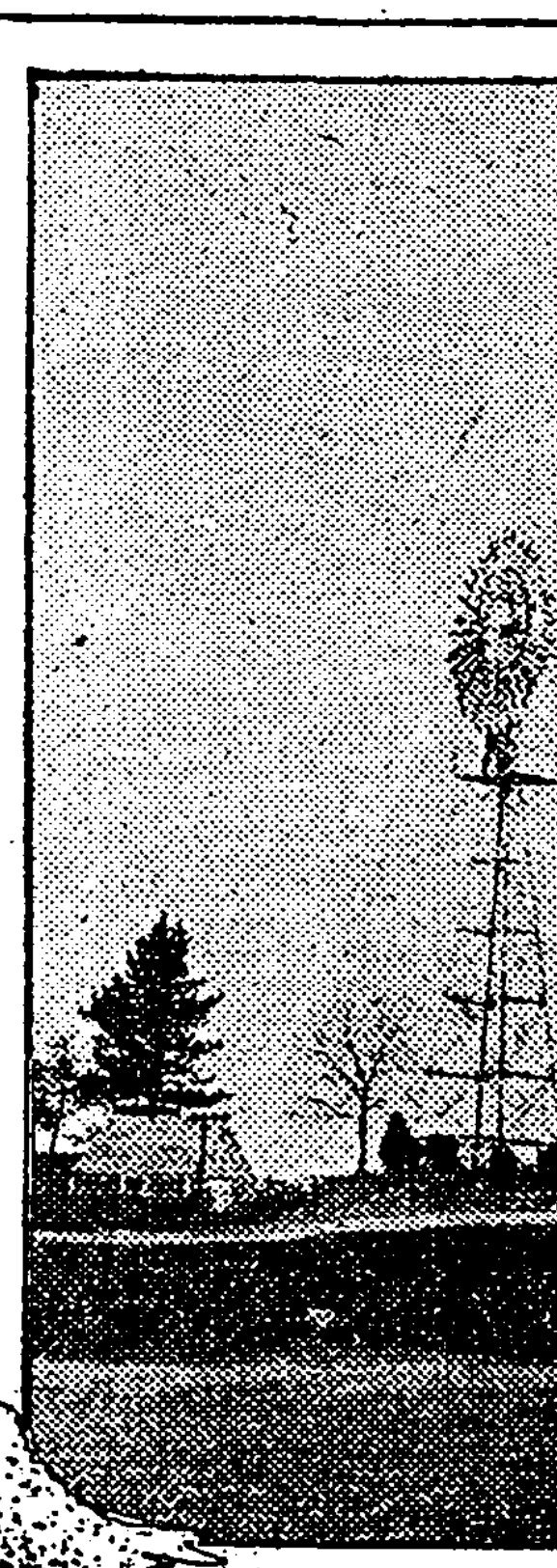
ZERO AT THE EQUATOR SOME DAY, SAYS DR. H. W. WILEY



A Windmill Which Generates the Power for a Factory.



But the Winds Will Keep People Warm, Adds the Head Chemist of the Agricultural Department-- Which Doesn't Mean What It Seems To.



This House Is Lighted by Electricity Generated by the Windmill at the Left of the Photograph.

THE wind will keep us warm," says Dr. W. H. Wiley, Chief Chemist in the Department of Agriculture at Washington, when inquiries are put to him concerning his prophecy of a frozen equator. And then, lest you suspect him of Chestertonian paradox, or Shavian playfulness, he will tell you sagely, and at length, how the wind can be made to do it.

The great social and economic trio of the future is "The Windmill, the Dynamo, and the Storage Battery," from which will come warmth and energy for that unhappy day when the cooling earth has made artifice imperative. Every gentle zephyr will have its caloric value, and computations of the potentiality of the Cave of the Winds will be included in high school curriculums.

But Dr. Wiley tells his own story, without too much interlarded flippancy or too much floridity of detail.

While skeptics prattle of how much wealth may be realized on the gusts around the modern skyscraper, Dr. Wiley is delving into the reliability of storage batteries. While the idlers seek to discover what is the voltage of a damsel's sigh, Dr. Wiley is counting the cost of the erection of windmills. For however fantastic may appear the idea of warming one's self in the radiance of a nor-easter, it has been reduced to a practical basis by this most practical of chemical experts.

Dr. Wiley has been at work for a long time, perfecting and polishing the processes by which he will make electricity of the wind, but he has not talked about it until very recently. Then, at Washington, he delivered a lecture upon whether the human race ultimately will starve or freeze. His reply was that the earth was cooling so unmistakably that freezing was to be our lot. Starvation could be indefinitely forefended by means of artificial and intelligent cultivation of soil, but what could warm us satisfactorily if Broadway became like unto the north pole, and the equator as bleak and rayless as the Alaskan wastes?

The answer, said Dr. Wiley, was warmth and work by electricity, and electricity to be had from the winds.

Waterfalls are separated and uncertain, but the winds are with us always. Dr. Wiley himself says that in his long life of painstaking observation he has never known any twenty-four hours to pass without wind, and that for the major portion of the time far more electricity could be generated than would be required.

"Geologists have for many years admitted that the earth is cooling," he says, "though it is my personal belief that we still have a lease on life that may run into the billions of years. But whether the

time of our natural warmth is long or short, it is certain that the hours of it are numbered. Ultimately the equator will be frozen.

"I do not believe that the advance of starvation over the face of the earth will make such haste as the gradual chill. I think, in fact, that whereas we now are cultivating by fertilization six inches of the surface of the earth, and are insuring our crops year after year, in due time we can increase our cultivated area to twelve inches, and can double our productivity. If in 100 years we have 800,000,000 persons on this earth to feed, we can do it with the utmost ease. Starvation, in short, is a dim and remote occasion. But not so with the cold. Up to the present we have found no generally accepted method of making the warmth of the earth reproduce itself. We cannot fertilize our generators of heat, with the heat we had yesterday and have used. We may make our earth arable by allowing its own vegetation to fall on it, and let till it is assimilated. How are we to make our heat reproductive?"

"The history of the cooling of the earth has extended over many thousands of years, but to this time nobody has discovered a way to utilize the excess heat. In the polar regions and in the furthest northern portions of Alaska, there have been discoveries of minerals and vegetables that were indisputable proof that these regions were once warm. The mammoth skeletons of animals recently found there demonstrate that these parts of the earth were once even warmer than any part of it now is.

"Of course, the glacier regions have offered some contradictory proof, in the minds of some scientists. I personally believe that when the poles cooled, and froze, there was a precipitation of the moisture that had previously been in the air, and that therefore glaciers are peculiar formations, not the result of universal forces or conditions.

"There is still intense heat inside the earth, of course. When the earth froze over in prehistoric times, the gaseous heat with which it had once perhaps been surrounded was to a certain extent enclosed. The volcanoes are witness to this.

"But how to make provision against the coming coldness is a matter upon which I believe already we should bend our thoughts.

"As long as the earth is in the line of the sun's rays, or is near enough to the sun to be swept by the winds that are born of the sun's warmth, we will not freeze.

"The wind, of course, is made by the enlargement of air in certain spots by the action of the sun. This expanded air rushes forth at greater or lesser velocity. It will continue to do this as long as



Dr. H. W. Wiley, Head Chemist of the Agricultural Department, Washington.

there is a disparity of heat in its several parts. And this will make the wind. I believe that if windmills with dynamos and storage batteries were put up, all over this country, there would never come a time when the supply of electricity thus made would be unequal to the ordinary

tasks of the farmer, or would fail to keep him abundantly warmed.

"Coal and wood will disappear from the earth. Coal already is dwindling alarmingly, and the most ambitious efforts of the foresters will not forestall the final obliteration of the forests. Elec-

tricity is manifestly the sole dependence of the future.

"In the Northwest several years ago the cold was so intense and the fuel famine so prolonged that the farmers there kept themselves alive by burning their boundary fences and their outhouses. The

winds were frightful in their temperature and destructive force. Why should they not have been utilized to keep those homes comfortable.

"By means of a simple windmill, power could be produced which would keep the homes of the far Northwest at a uniform temperature of 70 degrees Fahrenheit, even in the deadliest cold weather.

"The sun, being the source and origin of all energy and the initial impetus of every movement in the atmosphere, has been calculated to produce energy at the rate of one horse power for every four square feet of the earth's surface its rays fall upon. This horse power is open to any man who has ingenuity to use it and foresight to conserve it.

"The windmill is to be the conserving agency. It of course must be scientifically constructed, and must be intelligently employed. But once the proper windmill is made and built, upon the same general principle as those now in use, it will become one of the greatest civilizing forces of future centuries.

"In England there is already a company of scientists at work upon this principle, and the most gratifying results have been sent to me from time to time. There is a cottage over there which is entirely lighted and warmed by the power from the windmill in the back yard. There is a small amount of water power on the premises, but it is used solely for irrigation.

"These achievements in England are, of course, all patented, but they, or others as satisfactory as they, will find their way to American farms.

"These windmills in England are fitted up with wind turbines, which are said to furnish electric current without any charge, except the initial cost of constructing the mill. They are used for many purposes.

"For one thing, a bungalow near there is fitted out entirely with electric currents. Cooking and lighting is done by electricity, and ventilation is accomplished in the same way. Cooking by electricity will be doubly a boon to all persons living in hot climates. In winter this bungalow is amply heated by the same method, and among other things that are done by electricity are churning, pumping, refrigerating, and the driving of irons, grills, kettles, electric fans, and small cream separators.

"In short, electricity is all-sufficient to any household in case of need, and it can be generated by means of these wind turbines for vastly lessened cost.

"Any work about a farm can be done by this method. Irrigation and mining are two of the easiest and happiest achievements. Batteries and motors can drive a plow and a mowing machine, and

others can winnow and thrash.

"In short, if the earth is threatened with freezing over within a reasonably short time, it has its remedy fit to its hand. I do not think it will be necessary to wait till death is actually imminent, however, before taking up with this scheme of wind-made electricity. I believe that the present indications of impending shortage of coal and oil will do more to further the cause of the windmill than all the scientific prophecies in the world."

Thus is the fate of the Last Man forecasted. He has kindled the imaginations of countless dreamers. His rigors and exigencies have been a universal theme, in many generations.

Any normal person can remember when as a small child he was told how the earth finally would be consumed in flames, or enveloped in deadly cold, according to the prediction of his nurse. The problem of wresting victory from the situation has stimulated many an adolescent mind, and many backyard conversations have contained wise and ingenious remedies for that direful day when "the world comes to an end."

And grown-ups have speculated with just about as keen a zest, and, frankly, with about as futile conclusions. Surmise has been rife in every quarter as to what will ultimately happen to the human race, and not even the precocious office boy, who defined the "ultimate" as a "square meal," has allayed altogether the questioning of the race concerning its end.

According to Dr. Wiley, the Last Man will sit upon a frigid earth, saved from destruction by his windmill, just out of doors. He will live in an airtight inclosure, artificially ventilated by the power from his windmill. He will be warmed by his windmill, and he will maintain himself by foods artificially prepared, grown on a hothouse system.

He can have an electric pinola, if he wants it, and if he had providently made for himself a large inclosure, he can have a little runabout. He can print his own books in electrotypes and he can produce his own musical comedies. If he can keep his cow warm enough he can churn by electricity and may even get fat on buttermilk. He will be obliged to be a vegetarian and he cannot be a Socialist.

Life will have for him in short its common need of fortunes and misfortunes till something goes wrong with his windmill. After that the Martians may have their romances in the "earthlight" and speculate on the probable past history of the earth. Dr. Wiley, however, would have us shove along the evil day as far as possible, while there is yet time to build windmills.