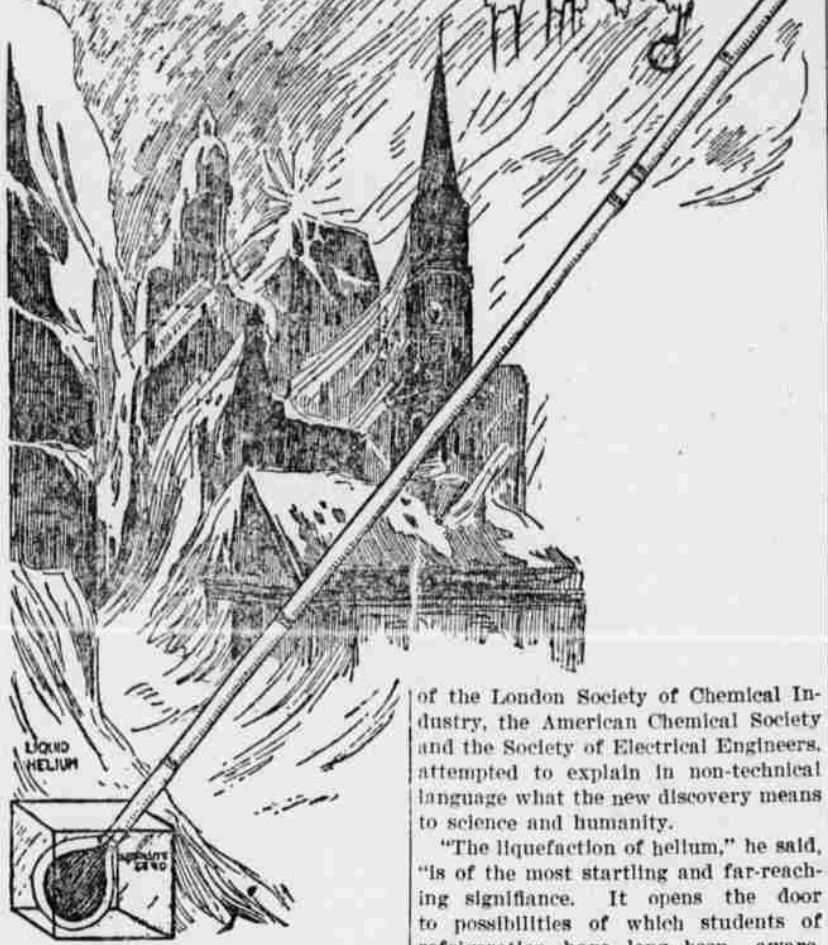


SCIENCE FINDS the COLDEST COLD



Prof. H. Kammerlingh Onnes of Leyden has succeeded in liquefying helium.

Terrifying in its destructive aspects and appalling in its danger, yet intensely fascinating in its possibilities for benefiting the world, the latest explanation of chemical science has placed mankind literally within but a few degrees of the frozen pole of knowledge.

Heat is life; cold is annihilation. The final and absolute extremes of these are as yet heights so exquisite and depths so profound that they mock at once the lens and the plummet-lens of human conception.

For the sake of convenience, however, science has established a purely arbitrary starting point for the measurement of heat and cold. This is called the "absolute zero," and is fixed at 459 degrees below the familiar zero mark of the Fahrenheit thermometer—a point which chemists have vainly sought to reach ever since Prof. Dewar most nearly approached it by his astonishing feat of liquefying air and hydrogen.

But even Dewar's greatest cold was hundreds of degrees from absolute zero. That was some ten years ago. Now comes news from the old town of Leyden in Holland—birthplace of the electric battery—that Prof. H. Kammerlingh Onnes of that city has succeeded in liquefying the rarest and most volatile of all gases. He has reduced helium to a visible fluid, determined its temperature and made the incredible discovery that it is but a fraction over four degrees from supposedly theoretical jumping-off place of Jack Frost.

In order to appreciate the vast significance of Prof. Onnes' achievement, it is only necessary to recall the means by which the air is kept at zero temperature in a cold storage warehouse. As everyone knows, evaporation causes cold. It is the evaporation of the water with which you bathe your face—not the temperature of the water itself—which produces the sensation of coolness.

According as the evaporation is slow or rapid, the cold produced is less or greater. So, in a cold storage plant, ammonia gas, which is extremely volatile, is allowed to evaporate, either directly into the air or it is released in the presence of brine (which freezes only at less than zero temperature) and the brine, taking the temperature of the evaporating ammonia, is then distributed in pipes throughout the establishment. Thus the desired degree of cold is imparted to the storage rooms.

Now fancy, if you can, a cold, compared with which the deadly chill from ammonia gas is hotter than boiling oil; call this the temperature of liquid hydrogen. Then, with this as a new point of departure, try to imagine a cold so profound that beside it liquid hydrogen itself is as a boiling oil, and the frozen heart of an ice plant is hotter than the bowels of a smelting furnace, and you have some conception of the temperature—if it can be called temperature—of liquefied helium.

Dr. H. T. Galpin, a well known authority on refrigeration, a member

of the London Society of Chemical Industry, the American Chemical Society and the Society of Electrical Engineers, attempted to explain in non-technical language what the new discovery means to science and humanity.

"The liquefaction of helium," he said, "is of the most startling and far-reaching significance. It opens the door to possibilities of which students of refrigeration have long been aware, but which thus far have been beyond our reach in actual practice. It is apparent, for example, that if we can distribute ammonia chilled brine from one room of a cold storage warehouse to all the other rooms in it, we should, theoretically, be able to distribute it from a central point of houses, office buildings, theaters and the like, at a distance, as is done with gas and steam. "But the size and the cost of the plant required, the impossibility of developing a degree of cold which will not be dissipated in transit unless pipes of prohibitive size are employed, has placed the idea in the category of laboratory dreams. Even the use of liquid air or liquid hydrogen would not obviate this last objection. The cost of the production and the distribution would outweigh the benefits.

"Science does not recognize the impossible, however, and if Prof. Onnes has produced a liquid which, forced to distant points through pipes small enough to be strung like telephone wires, is so cold that such distribution cannot materially impair its effectiveness—and this seems to be the case—science has achieved a most revolutionary triumph."

CURIOUS HOTEL CUSTOMS.

Where Every Cuss Word Costs a Penny.

A curious custom prevails at an Edinburgh hotel, says Tit-Bits. Whenever a customer is heard to swear he is required to place a penny in a box on the bar counter. It is not a matter for surprise that the landlord hears much less bad language than some of his fellow publicans in the capital of Scotland.

The following is a quaint idea for providing funds for picnics and social evenings. It is carried on with much success at an Ashton-on-Mersey Inn: A "knocking club" is connected with the inn, and when a customer calls for refreshments he is expected to knock on the table or counter before drinking. If he fails to do this he is fined one penny. Any one who wrongfully accuses another of breaking this unique rule is also fined. The money thus obtained provides funds for many enjoyable outings and pleasant evenings during the course of the year.

At another hotel, known as the Old Hundred, customers are allowed only one drink. If one is not sufficient to quench their thirst they are obliged to go out of the hotel and take a walk before they are allowed to have another.

Till recently the proprietor of an old-time hotel in Warwickshire used to invite all his customers to accompany him and his wife to the service at the parish church on Sunday mornings, which was situated on the opposite side of the road, the house being closed while they were away. On returning each customer was invited to partake of refreshments offered by the hospitable landlord free of charge.

Visitors to a certain hotel in Aberdeenshire who wear brown boots must remember to keep them in their room over night. Otherwise the boots will be blacked, regardless of the original color of the same. In one of the rooms of a Dumfries public house is an old armchair which is said to have been frequently used by the poet Burns.

A small hotel in Wales until quite recently was used by the Catholics as a place of worship on Sundays, and police court proceedings were held on the premises during the week.

EMPTY HOUSES IN LONDON.

Fifty Thousand of Them at Present Said to Be Lacking Tenants.

Fifty thousand empty houses in London! John Burns made this startling announcement in the house of commons recently, says Tit-Bits. Large as this number is there are those who believe it is under rather than over the mark. A remarkable change has taken place during the past five or six years. Whereas, formerly landlords were masters of the situation, tenants have now the whip hand in nearly every district and are offered all manner of inducements to take houses.

It is not long since that a premium—or, what amounts to the same thing, "key money"—was demanded by property owners in some parts of London. Today numbers of such men will actually allow tenants a discount, which consists in the case of small property of the expenses of removal up to £1, or else of so many weeks' occupation free. Usually no rent is required for the first fortnight, but in certain localities the competition between property owners is so keen that the period in some cases is one month, making the discounts about £2 2s or £2 5s.

A more curious bait is free insurance. One company gratuitously insures each of its tenants against fire; while another, besides safeguarding the householder against this contingency, relieves him of apprehension respecting any damage to his furniture by lightning or flood.

Certain separate charges have also been swept away, particularly in the case of flats, which, it is said, are now a drug in the market. Some landlords, for instance, made one for the cleaning of the common staircase, this, with the "extra" for gas, amounting to about 1s 6d per week. The 1s 6d was really rent, and the reason it was not called such was partly to evade payment of rates. When this is an actual case—a man owned about fifty flats and returned their rent as 15 pence per week each less than it really was, his assessment was considerably lower than it ought to have been, and consequently he did not pay his due proportion of rates. But, of late "extras" have frequently been cut to the amount formerly set down as "rent."

REFUSE BURNING BASKET.

Device for Getting Rid of Household Accumulations.

"Oh, my! Whatever shall I do with all this rubbish?" exclaims the housekeeper, beholding a miscellaneous collection of papers, scraps and paste-board boxes, the roundup of the regular weekly cleaning.

The ashman declines to take anything but ashes, the rubbish man picks out only such as he can find use for, and the second-hand man will have nothing but whole papers, and they must be clean, at that." This little monologue may be heard most anywhere. The conditions are about the same in any city of large or medium size. There is a great deal of accumulated material around a house which is quite difficult to dispose of. It might be burned, but an effort to dispose of the mass in an ordinary stove would more than likely lead to disaster, even if the stove is of suitable proportions to accommodate the collection. Most of them are not.

The housekeeper's quandary has led to the invention of a model device to be added to the equipment of the household. It is a refuse destructor, in which the accumulations of the household are to be disposed of by burning in the back yard without danger. The destructor is a basket of wire built on an iron frame, supporting it several inches above the ground. Into this the household accumulations are dumped, as well as the sweepings. A match applied soon reduces the big pile to a handful of dust. Such a device solves completely the problem of the disposal of a great deal of material.

A High Award.

"To you we award the palm."
"Can't you give me something more lofty," asked the aviator, disdainfully.
"I have flown so high that I consider the palm beneath me."—Kansas City Times.

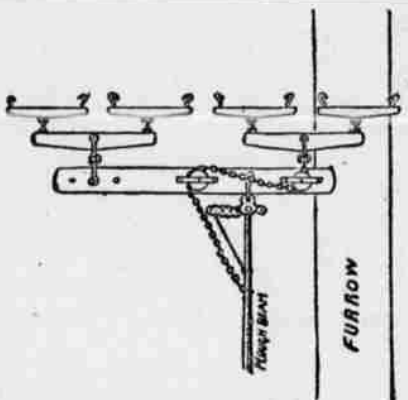
There are a good many rabbits playing lion parts.

FARMS AND FARMERS



Four Horse Evener.

One of the simplest forms for four-horse evener is shown in the illustration which is self-explanatory except for measurements. Besides double-trees of ordinary plough length, and the stick of tough oak from which to make the evener, two pulleys large enough so a small link log chain will work through them, two bolts to bolt the pulleys on and two pieces of two-inch wide strap iron bent and used as braces for the pulleys, are required. These pieces of strap iron had better be bolted, also. Their use is to furnish a brace for the pulleys. Any small link log chain can be used, and if too long it can be wrapped around the plough where hitched. Now for the measurements. In the first place, the stick



SIMPLE FOUR-HORSE EVENER.

needs to be five feet four inches long, and from the right end to the first pulley it is just seven inches. This measurement is to the center of the pulley. From the center of the right pulley, measure fifteen and one-quarter inches and bore a hole, which is where the plough head clevis fastens. Now go back to the extreme right end of the stick and measure thirty and three-quarter inches. You then have the place where the second pulley is to be placed. This puts the two pulleys just twenty-four inches apart. This completes all the measurements that need to be accurate. At the left end, where the left team is hitched, it is best to bore about three holes, and you can fasten the doubletrees in whichever hole which seems best suited to the team. Bore the first hole about two and one-half inches from the end, then go two inches and bore another, and two inches from that, if a third hole is wanted. This evener will work one horse in the furrow and three on the plough, and there will be no side draft. Hitch the chain up pretty short so there is not too much slack when turning to the left, and hitch it to the plough back about where the coupler runs, or where experimenting tells you is the best place.—Montreal Star.

Food for Young Calves.

Withhold solid foods until the calf will take them dry, which is usually at about three weeks of age. As the calf grows older encourage big eating in order to secure good storage capacity, and with sound and nutritious foods stimulate both digestion and ability to digest.

By rich cream we have commonly come to understand to mean milk rich in butter fat. It is admitted that milk richest in butter fat is also richer in casein; and, while an excess of butter fat is not likely to disarrange the stomach of the calf, an excess of casein will. Therefore, allowing the milk to cream, and removing this to reduce the richness of the milk to the needs of the calf, is an aggravation rather than a modification, for by the skimming process the proportion of casein has been increased, while the effort that should have been made should have modified the casein. This can be accomplished by simply adding water to the whole milk, maintaining blood temperature.

Salt as Mangel Fertilizer.

The value of salt as a manure for mangels has often been demonstrated, and the demonstration was repeated at Woburn last season. About fifteen tons of farmyard manure were applied to four plots, and this appeared to be sufficient to produce nearly as much as could be grown on the soil of the field. One plot had also a top-dressing of one hundredweight of nitrate of soda, which very slightly increased the yield. Where one hundredweight of salt was added there was a further increase; but where the quantity of the nitrate was doubled, without salt, the yield was reduced.—Agricultural Gazette.

Poultry-House Lice.

Turn out the fowls some days and close all the cracks in the house except the door. Take a kettle of live coals, and place on the ground in the center of the house, but if there is a wood floor, lay a flat stone under the

kettle. Throw a half pound or a pound of sulphur on the coals, and shut the door. If the house is left closed for a few hours it is safe to conclude that no lice or mites will be found therein after the operation. The sulphur cure is the best method of ridding poultry houses of pests, but if the house is not tight it will not prove satisfactory. Clean the house as well as it can be done, mix whitewash with fresh lime, mix in a liberal supply of sulphur, after which throw sulphur into all the cracks. Apply kerosene oil to all the roosts, and burn off the outer surface. Air the house thoroughly.—Weekly Witness.

The Age of Sheep.

The age of sheep is very easily shown by an examination of the teeth. A lamb has the first pair of permanent front teeth when about 10 months old; the second pair appears at about 18 months; the third pair at 28 months and the fourth at about 33 to 40 months. When the whole of the permanent front teeth have appeared the sheep is in its fourth year. The Merino matures its teeth later than the other breeds; the Cotswold and South-downs and other highly-improved mutton sheep are some months ahead of a Merino, but at 4 years every sheep has its full mouth of teeth. Later the age is known by the appearance of the teeth, which gradually lose their sharp edges and become worn down smooth. A healthy sheep will keep its teeth good until 10 or 12 years old, if the pasture is not unusually bare and the soil sandy, so as to wear the teeth excessively.

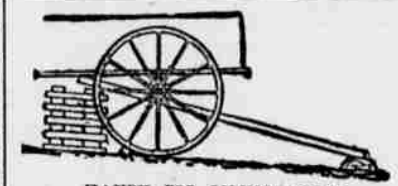
Sheep as a Civilizer.

A speaker at a farmers' meeting eulogized the little animal with the golden hoof in the following interesting strain:

"Sheep are always the advance guard to attack new and undeveloped territory. The first sheep and the first negro slaves that placed foot on what is now the United States of America, were landed from the same fleet at St. Augustine, Sept. 5, 1565, 330 years ago. From that day to this the sheep has been the most universal live agent of the settlers in subduing the country and maintaining its productivity; and whenever they have neglected their sterility exists as a monument to their folly."—Weekly Witness.

To Lift a Loaded Wagon.

Build a grip of timber under a wagon and place upon it a heavy beam, as shown in the sketch. Let this come just under the axle of the wagon. Then



HANDY FOR OILING AXLES.

place a stone in front of the wheel, so that when the team draws the wagon forward the wheel will be lifted upward on the inclined beam. If the incline is not too much the wagon will not slip backward and the wheel will be loose for oiling.—Farm and Home.

Looking Forward.

Luther Burbank, the famous horticultural wizard, says there is not a weed alive which will not sooner or later respond liberally to good cultivation. A day will come when the earth will be transformed, when man shall offer his brother man not bullets nor bayonets, but richer grains, better fruit and fairer flowers.

Poultry Pickings.

The heating of the brooder plays a very important part in the growth of the young chicks.

The fowls and eggs from a pure bred flock of hens will bring more money on account of their uniformity.

A good brooder is of more importance than an incubator, if one can be of more importance than the other.

There is nothing that fits into the regular farm crops and live stock better than a well managed flock of poultry.

Do not expect to find smooth sailings with the incubators and brooders at first. It requires patience and vigilance in learning to manage them.

The cost of securing well bred poultry is so comparatively small that there is no excuse for keeping a lot of mongrel hens.

There is nothing more disgusting than to see a lot of old, scaly legged roosters running with a flock of hens. Sell them off and keep good, healthy males.

One of the most conservative poultrymen says that if all farmers would keep pure bred poultry the business would be doubled in a few years and that we would still be getting good prices for our produce.