

MACHINE FOR STRETCHING AND SOFTENING CLOTH.

The machine illustrated in our engraving is the invention of Mr. Devilder, and is designed for stretching and softening woollens, linens, and other fabrics. Several cylinders and rollers are supported by a cast iron frame, and operated by power transmitted by a belt and gearing. The necessary pressure on the goods is produced by a weight, pulleys, and levers. The goods, rolled on the lower cylinder in the rear part of the machine, are carried between a zinc cylinder and a wooden roller situated directly above the lower cylinder. The zinc cylinder runs in a trough filled with water. By this means the necessary degree of moisture is imparted to the goods. They are next taken up by a bar at the top of the machine, which may be regulated so as to increase or lessen the tension of the goods. From this bar the goods pass to the stretching cylinder, which is composed of sixteen copper plates revolving around, and alternately approaching to and receding from a common axis. The approach takes up the first half of the revolution and the return the second half. The goods, by this means, are well stretched; they are afterward rolled on a wooden cylinder below the stretcher. This machine has been extensively introduced throughout France.—*Revue Industrielle.*

A Canadian Canal Project.

A special committee of the Ontario Legislature have reported in favor of the proposed Huron and Ontario Ship Canal. They think that the hydraulic lift lock will be the principal means of overcoming the difficulties in the construction of the canal. The estimated cost is \$20,000,000. Of the utility of the canal the committee say:

"A cargo of grain shipped from Chicago through the Sault Ste. Marie Canal, Lakes Huron and Erie, and the Erie Canal by way of New York to Liverpool, would traverse a distance of 4,600 miles. The same cargo, passing through the proposed canal, and going by the St. Lawrence canals by way of Quebec, would only have to traverse a distance of 3,766 miles, a saving of no less than 834 miles. Even compared with the Welland Canal the gain in distance is very great. From Chicago to Quebec by the Welland Canal is 1,500 miles, while by the Huron and Ontario Ship Canal it would be 1,180 miles, a saving in distance of about 320 miles."

After making due allowance for tolls, the estimated saving in the cost of shipping grain from Chicago to Liverpool, by the proposed route, would be close upon \$3 a ton.

A NEW ATTACHMENT FOR BOILERS.

A great amount of attention has been bestowed upon the economical consumption of steam, and the more vital question of economy in the generation of steam has been more or less considered. While many improvements have been developed, no very remarkable results have been heretofore attained. The accompanying engraving, however, shows an attachment for boilers which promises to be important. A number of practical tests extending over a considerable time appear to demonstrate that the correct principle has been arrived at.

The invention, which is exceedingly simple, may be readily understood by reference to the engraving. A steam pipe extends along the face of the boiler arch, as shown in Fig. 1, and connects with a series of small nozzles placed concentrically in bell-shaped tubes that extend through the fire arch wall, as indicated in the sectional view, Fig. 2. These nozzles are inclined slightly downward, and the steam which enters through them tends to hold the gases down near the fire, where they are subjected to intense heat; this, in connection with the air which is drawn in through the bell-shaped tube, and the steam which is partly or wholly decomposed, produces a very high heat and insures the complete combustion of the gases. This effect is realized even where the natural draught is insufficient to maintain the required steam pressure, as it is found that wherever the apparatus is applied the draught is greatly improved. Another thing which is of secondary importance is the entire absence of deposits on the boiler or flues.

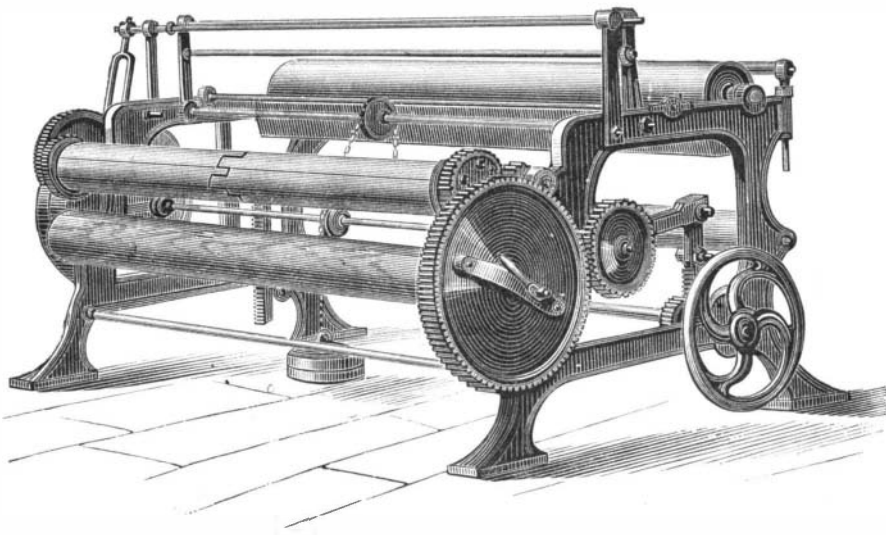
The inventor claims that this apparatus will not only save a large percentage where a good quality of coal is burned, but it will enable a poor quality of coal to be used with good results.

We have before us a report of tests made on a steamer plying on one of the Western rivers, which indicates an important saving in coal. We are also informed that it is in successful use on some of the

leading railroads. For further information address Mr. F. C. Mathews, 237 and 239 Canal street, New York.

FOUNTAIN WATERING TROUGH FOR CATTLE.

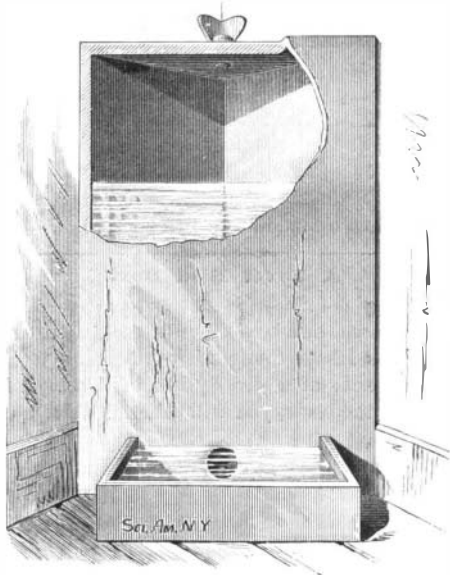
The watering trough shown in the annexed engraving is especially designed for use in connection with cattle transporting cars. Its principle is essentially that of the reservoir of the well known student lamp. The upright tank which



MACHINE FOR STRETCHING AND SOFTENING TEXTILE FABRICS.

holds the water fits the corner of the car. A drinking trough is attached to the front or wider side of the reservoir, and communicates through a threaded aperture with the reservoir, which has at the top a stoppered aperture for filling.

As the cattle drink from the trough, the water becomes lower than the top of the threaded aperture and air is admitted to the reservoir, allowing water to escape until the aper-

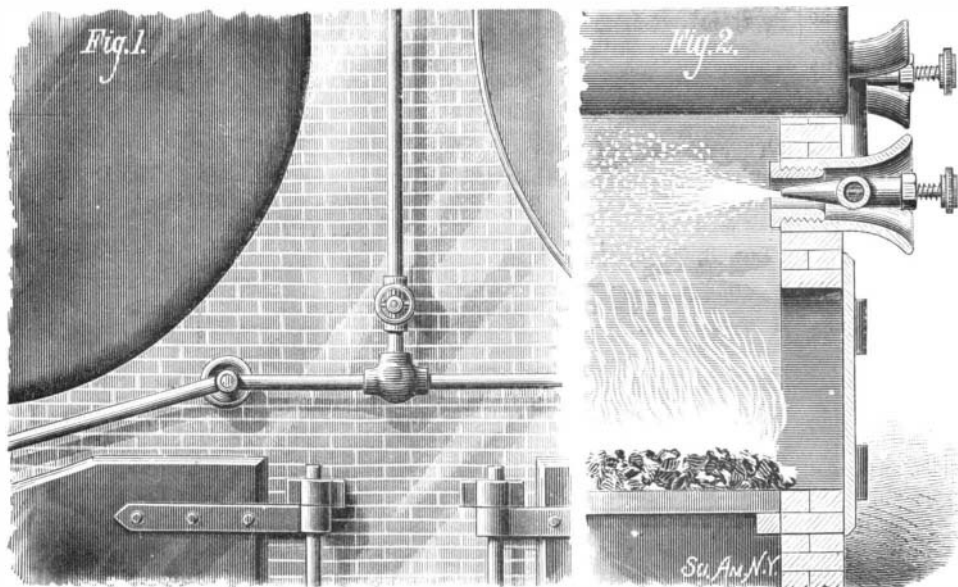


JOHNSON'S WATERING TROUGH FOR CATTLE.

ture is again covered. By this operation the trough is always kept full of fresh water until the reservoir is exhausted.

The reservoir is filled through the stoppered aperture at the top, after closing the lower aperture with a screw plug.

This apparatus takes up none of the room of a car which would be available for other purposes, and it affords a needed relief to cattle that are not too well treated at best. This watering trough is the invention of Mr. Samuel Johnson, of Philadelphia, Pa.



MATHEWS' BOILER ATTACHMENT.

Have we too many Colleges?

Professor R. D. Hitchcock, a profound thinker and writer who has but few equals in any land, lately addressed the graduating classes of one of the medical colleges in this city. Passing over that portion of his address to the students in which he gave them wise counsel as to their duties on entering the field of their profession, we proceed to the Professor's closing remarks. Alluding to the three professions, medicine, law, and divinity, in which, he claims each has its own science or group of sciences to cultivate, he adds:

"The professions are to society what the brain is to the body. But the brain may be too big for the body, or may get too much of the blood. This is what is the matter with Greece to-day. A university with more than fifty professors, and more than twelve hundred students, for a people numbering only a million and a half, is something to be looked at twice, and looked at all around, before we applaud it. If these young men, when they quit the university, would also quit Athens, return to their sunburnt homes, to plant trees, sow crops, ply trades, build roads, and launch vessels, Greece might hope to be Greece again—the Greece of Pericles as well as Plato. I may be blamed for saying it, but I am honestly of the opinion that our American civilization also is overdoing itself professionally, not in quality, but in quantity. Political economy is now in rapid development, and will be able

to tell us, by-and-by, with a great deal of precision and certainty, the proper normal proportion between the four great classes which we call agricultural, mechanical, commercial, and professional. Meanwhile, I think it safe to say that we are just now making too many doctors, such as they are; too many lawyers, such as they are; too many ministers, such as they are. I do not forget that the Christian ministry claims to be, and is, preeminently a service, not wholly of this world. But it is likewise a profession, and as such, amenable to economic law. I know, too, very well, that no profession is crowded near the top. But too much crowding at the bottom hurts the top; too much competition for the lower places cheapens the competitors; so that candidates for the higher places are fewer, if not inferior. In regard to your own profession, tell me whether it is yielding to-day its proper proportion of great practitioners and authors? I may be mistaken about the other professions, though I know them better; but my impression is that the law is not yielding to-day its proper proportion of jurists and statesmen, nor is divinity yielding its proper proportion of great preachers and theologians.

"Our educational system, I feel constrained to say, is, in my judgment, seriously defective. Of academies like those at Exeter, Andover, and Easthampton, we have too few, of colleges and professional schools, we have too many. If some of them would only die, bequeathing their endowments to institutions better placed and better appointed, it would be a great gain. Under present conditions, the next best thing to be done is to inaugurate everywhere a system of rigid examinations. Such examinations may thin our ranks for a time, perhaps permanently. If only for a time, the wisdom of the policy will soon be vindicated. If permanently, it will prove that our ranks should have been thinned long ago."

Ornamenting Steel Surfaces.
Bright steel surfaces may be ornamented by painting the patterns intended to be left bright, in Brunswick black. If the ornament is to be dead upon a bright ground, the patterns must be left untouched, and the ground painted over. Aquafortis—diluted nitric acid—should then be poured upon the exposed parts of the steel, and in a few minutes it will be seen to have eaten sufficiently into the metal. Wash off the aquafortis with water, and Brunswick black may be removed with turpentine. If the steel is made blue by exposure to heat, the blue color can be removed, where it is not required, with white vinegar or other weak acid, the parts to remain blue being protected by Brunswick black. On the parts from which the blue is removed further variety may be gained by painting additional ornaments in Brunswick black, and exposing the remainder of the ground to the action of the aquafortis. Gilding on steel was formerly performed with a spirit, but now it is best to send the work to an electro-gilder's, first painting over those parts not to be gilt with Brunswick black. The gilding may be performed at home by the following method: It is known that if sulphuric ether and nitro-muriate of

gold are mixed together, the ether will, by degrees, separate from the acid nearly the whole of the gold, and retain it for a long time in solution. Take ether thus charged and with a soft brush paint the parts of the design intended to be in gold, and after giving the ether time to evaporate, rub over the parts thus gilt with a burnisher.

MISCELLANEOUS INVENTIONS.

A scoop, whose body consists of an unbent wooden veneer or circular section of a wooden block, has been patented by Mr. William C. Freeman, of Louisiana, Mo. The head is rabbeted and secured to the bowl by glue and pins or nails.

An improved neck yoke has been patented by Mr. Charles Hauff, of Ashland, O. It consists in making the part usually called the "leathers" of rubber and linen cloth or duck in one continuous piece, and in such a manner that there will be a core of duck or linen cloth deeply covered by rubber.

An improved furnace for roasting ores has been patented by Mr. C. E. Robinson, of Brooklyn, N. Y. The process of roasting, as conducted in this furnace, consists in subjecting the pulverized ore simultaneously to the action of a jet of flame, and a jet of air, steam, or gas introduced underneath the charge. By this means the particles of ore are kept in continual suspension during the operation of roasting.

Mr. George Neally, of New York city, has invented an improvement on the smoke excluding mask, for which he received letters patent September 18, 1877. The improvement renders the mask more simple and compact. The mask is intended for the use of firemen and others to prevent suffocation by smoke.

An improved bill file, patented by Mr. Michael Posz, of Shelbyville, Ind., consists of a case containing a number of shelves which rest upon a carrier, supported by springs attached to the bottom of the case. The shelves are lettered in a peculiar manner, and an index is arranged at the side of the case.

An improvement in dress shirts, patented by Mr. Henry F. Elias, of New York city, provides a pocket for the reception of the handkerchief, purse, etc., and at the same time makes that part of the shirt body, between the side seams and bosom, and from the yoke to the waistband, two-ply.

Messrs. E. H. Krier and C. L. Ervin, of Plum Creek, Neb., have invented an improved stencil plate for marking cattle. The improvement consists in attaching to the plate an upper flange to confine the acid, and a downwardly projecting flange that surrounds the letters, and is pressed into close contact with the hide of the animal to prevent the spread of the acid employed in forming the mark.

Mr. Edward G. Grahn, of Indianapolis, Ind., has devised an improved carriage curtain fastener which is simple, secure, and easily operated.

The Calamity at Szegedin.

The destruction of the Hungarian city of Szegedin by flood, March 12, is one of the worst disasters of the age. Szegedin was one of the foremost commercial and industrial cities of the Austro-Hungarian empire, and contained a population of about 72,000, which number had been increased to 80,000 or more by refugees driven in from the surrounding country by the flooding of the river valleys.

Szegedin was built on a marsh on both sides of the Theiss, at the junction of the Maros, a Transylvanian river, and was divided into a central town, in which the merchants' residences were grouped around an old fortress, an upper and a lower town, and New Szegedin, on the east bank of the Theiss. The city had a large market place, several churches, convents, hospitals, and a Magyar theater. Its trade was considerable, owing to the facilities which the Theiss affords for communicating with the country districts. It received corn, rapeseed, tallow, and other Hungarian products in large quantity and distributed them throughout the Austro-Hungarian empire. It had several prosperous factories, being noted for the manufacture of superior boats and floating mills. The merchants dealt largely in wines, timber, and manufactured goods from Vienna and Bohemia.

A less severe inundation of the city occurred in 1870, and in 1874 the suburb of New Szegedin was submerged. The government then proposed to change the course of the Maros, which pours immense volumes of water into the Theiss, by cutting a canal and guiding the river round New Szegedin, and joining it again with the Theiss on the south side of the suburb. By thus leading away a large portion of water and straightening the channel of the Theiss above Szegedin, it is said that inundations could be absolutely prevented, but the project had not been carried out. The highest portion of the city is said to be not more than 12 feet above the low water level, and the only precaution the government has thus far taken to save the city from annual inundations is by surrounding it with strong dikes. It was by the bursting of these dikes that the disaster occurred. The loss of life and property was enormous.

The Polaroscope Adopted for Testing Sugar.

A report has been made to the Treasury Department that the experiment of washing sugars to discover their true color has been found impracticable, and Secretary Sherman has issued an order that the Cuban centrifugal sugars now being received shall be polarized and otherwise tested to ascertain whether they have been artificially colored after crystallization; and in all cases reported as artificially colored for the

purpose of evading the duty in part, an increase of three quarters of a cent a pound shall be levied. In the order the Secretary establishes 92° as the extreme test of polarization for sugars to be classified as not above No. 7 Dutch standard; all above that test of saccharine strength to be classified as from No. 7 to 10, or from No. 10 to 13, Dutch standard.

Customs officers state that this order has been considered necessary by the Treasury Department to prevent low grade centrifugal sugars with high saccharine strength from being admitted on the lowest rate of duty.

Correspondence.

Collecting Postage Stamps.

To the Editor of the Scientific American:

Last summer I visited several summer resorts in different parts of the country, and found a universal mania prevalent for collecting postage stamps from letters which had passed through the mails. The reasons given for this were various. At one place I was told that a rich gentleman in Boston had agreed to give a poor boy a situation for life, but as a preliminary test of the boy's business capacity and perseverance, he required him to collect enough postage stamps to paper the side of a room.

The next story I heard was that a wealthy young lady in the South had made a bet that she would collect a million of postage stamps in a certain time, and had called upon all her Northern friends to assist her in doing so.

Again, it was stated that these stamps are used in the making of *papier maché*; but this is such arrant nonsense that I can hardly suppose anybody would believe it seriously.

The most common story, however, is that the object is a charitable one—that if a certain number of stamps can be collected, some old woman or some crippled boy is to receive a place in an institution, where he or she will be cared for for life. This view is received with implicit belief by many excellent people, who work with great earnestness to carry out the object by inducing their friends to save all their old envelopes.

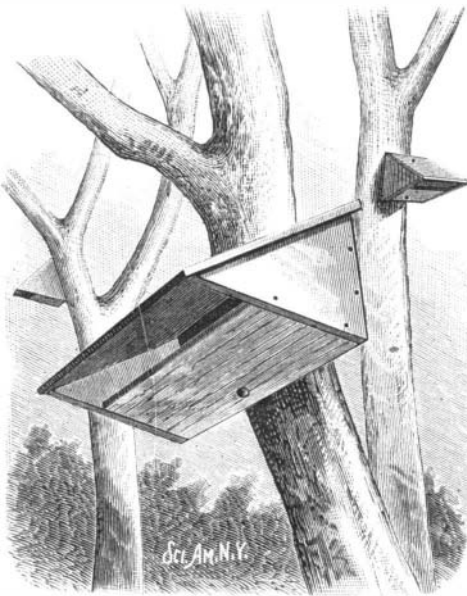
It ought to be stated for the information of all, that in nine cases out of ten, the real object of collecting these stamps is to cheat the government, by washing off the Post Office mark by means of a chemical preparation, and then selling the stamps again.

An ostentatious announcement was made a few days ago in one of the city papers, that \$800 had been paid to a lady for charitable purposes who had collected a million of these three cent stamps. An investigation will show that they all go through various channels to certain parties who are engaged in defrauding the revenue. The rascals can well afford to pay \$800 as an advertisement, for a million of three cent stamps when cleaned are worth \$30,000. D.

A Novel Bird Box.

To the Editor of the Scientific American:

I have made some bird boxes for my trees that are so unique and simple that I have thought it worth while to give your readers the benefit of a description of them. I hope, in the interest of the birds, you will think as I do.



They are made of half-inch white pine, and painted; they require fourteen $1\frac{1}{4}$ finishing nails, as also two larger nails to fasten them up with. They afford the same kind of sheltered nook that birds seek. J. V. MEIGS.

Lowell, Mass., March 7, 1879.

The Giant Snapping Turtle.

To the Editor of the Scientific American:

Will you kindly allow me space to correct a few errors in the article on the giant snapping turtle in your issue of March 22? In the first place the author has confounded three species—*Trionyx ferox* (not *ferus*), now *Aspionectes spinifer*, *Aspionectes ferox*, and a totally distinct turtle, *Macrochelys laeertina*, the alligator terrapin of the Mississippi. The first of these inhabits the northern and middle tributaries of the Mississippi and St. Lawrence; the second the rivers of the Gulf States from Georgia to Texas; the third is also an inhabitant of the Gulf States, being most abundant in Louisiana. It is to this last that the remarks about size

and weight apply. This turtle has a slight resemblance to our common snapping turtle, but is distinguished by three lofty dorsal ridges, and its huge neck and head; the neck being so large as to be but partially retractile. The alligator terrapin does occasionally attain a length of five feet and a weight of sixty to eighty pounds. The soft shelled turtles never attain this size and weight, a very large specimen of *A. ferox* measuring but two feet eight inches in length.

FREDERIC A. LUCAS.

Rochester, N. Y., March 16, 1879.

Grafting Eyes upon the Blind.

To the Editor of the Scientific American:

In our community, as elsewhere, there are large numbers of blind persons, blind because some part of the mechanism of the optic lobes is unable to respond to the influence of light; this is often the case when no imperfection exists in the muscles or nervous channel of communication to the brain. This is an established fact of ocular science.

It is also true that where a finger may be entirely severed from the hand, by accident or otherwise, if taken in season, replaced and properly held in position, and if skillfully treated, union will result; this has been true in my own case. Now, there can be no question but that the nerve fibers distributed through the fingers are susceptible to the most delicate sensations. The practice of skin grafting is also common in surgery. So is the transfusion of blood from the healthy person's veins to the sick. If the foregoing is admitted, is there any reason why, proper conditions being observed, a sound, healthy eye could not be ingrafted on the muscles and nerves which had previously been severed from an imperfect eye?

In this and all other communities there are annually, we might say weekly, numbers of criminals put to death under sentence of capital punishment. Whatever may be said of the moral condition of these criminals, it is certain that their physical condition is usually good. The question may here arise, do these unfortunate persons possess anything that may be preserved and become useful to the humanity they have outraged? It would, of course, seem cruel and inhuman even to propose the extraction of the eyes, or other essential organs, before death, or where there was a possibility of the individual regaining consciousness.

But in this connection we may ask if it is necessary to perpetuate the time honored (or rather dishonored) mode of executing criminals by strangulation; or would it seem any more inhuman to civilized beings to cause death by means of chloroform or ether? If not, could not the criminal who is to give up his life, and the patient who is blind, be placed under the influence of ether at the same time, and the transfer effected before life becomes extinct on the part of the criminal? This at least would be a painless way of expiating the sentence of the law.

As a matter of course, doubtless, many patient and delicate experiments would have to be performed before the plan here proposed could be brought to success; but such experiments, I think, may be performed on dumb animals, using every precaution to prevent unnecessary suffering.

D. A. REARDON.

Boston, March 21, 1879.

AUSTRALIAN INSECTS IN CALIFORNIA.

Prof. C. V. Riley, Entomologist of the United States Department of Agriculture, reports that serious complaints have come from the Pacific slope during the year, of a new insect that is killing many of the orchard and ornamental trees in that section of the country. Specimens received from Mr. A. W. Saxe, of Santa Clara, California, show it to be a species of *Dorthisia*, an abnormal bark louse (family, *Coccidae*). It is an Australian insect (apparently *D. characias*, Westw.), and has of late years been introduced on Australian plants into South Africa, where, according to Mr. Roland Trimen, curator of the South African Museum, it has multiplied at a terrible rate, and become such a scourge as to attract the attention of the government. It has evidently been introduced (probably on the blue gum or eucalyptus) to California, either direct from Australia or from South Africa, and will doubtless become a great evil, because most introduced insects are brought over without the natural enemies which keep them in check in their native country, and consequently multiply at a prodigious rate. The best remedy is a judicious use of kerosene or linseed oil.

The Texan Cattle Drive for 1879.

The *Express* of San Antonio, Texas, reports that the prominent stock raisers and drovers of that region almost unanimously unite on an estimate of 175,000 to 200,000 head as the number of this year's cattle drive from Texas. The first number is considered low, and the last the greatest that can be expected. The greater proportion of the drive will be yearlings and two-year-olds. Prices are considered high, but holders are firm. The demand for cattle is very good, but the transactions have been rather light of late, many who came to Texas to buy preferring to wait for better rates, or, failing in that, to take their chances after the cattle reach the North. There is talk of stopping the drive entirely for a few years in order to raise the price of Texan cattle. It is thought that by so doing the Northwest would be drained of cattle, and the old prices for Texan cattle restored. The plan seems hardly feasible, however, and the indications are that the great ranges of the Northwest will ultimately wrest from Texas the control of the cattle trade.