ferred directly from the brewer's reel to the trumble for this purpose. The trumble is a cylinder about 9 feet long and 4 feet in diameter set on an incline of about 15 degrees from the horizontal and revolved by a gearing on the outside. It is often provided with a steam pipe through its axis for raising the temperature of the rice, to effect a higher luster in cold weather. The rice, together with the coating materials, is introduced at the higher end of the trumble, and the shiny appearance is produced on the grain as it moves slowly round and round and ultimately pours out at the lower end. To the inside surfaces of the trumble are fixed several small strips of wood, which carry the rice up the side and let it fall again as the cylinder revolves, thereby increasing the friction on the rice grains. Glucose of a good quality, which is generally heated and mixed with a small proportion of water, is fed from a tank in a constant small stream upon the rice as it enters the trumble. Talc is introduced at the same place by means of a screw feed connected with a supply box. The quantity of each coating material added is regulated by the miller to suit the quality of the particular lot of rice being milled. No other coating materials than those mentioned have been observed in use in the mills of the United States. In some cases a second trumble without glucose and talc feeds supplements the work of the first, and it is generally conceded that the extra friction gives to the rice a brighter and more desirable luster.

Grading the Rice.

Grading Machines.—From this stage to the ultimate bagging the problems met with pertain to the grading of the clean rice. However, if the rice is damaged or very inferior because of the presence of red rice, it is often bagged ungraded and sold as "line" rice. The shaker frame, which was the earliest device used for grading rice, is simply a framework, mechanically operated, which supports a set of inclined flat metal screens. These screens are removable at will and are numbered according to the sizes of the round perforations in them. The unit of measure is a sixty-fourth of an inch hence, a No. 8 screen has holes eight sixty-fourths of an inch in diameter. Shaker frames are still used in practically all mills, to aid in the grading work. In most cases a considerable proportion of the "fancy head" grade is removed on the screens before the rice goes to the cockle cylinder.

Head Grade.—If the quality of the rice being milled is exceptionally good an extra fancy head grade is made, which consists of the largest and most nearly perfect grains of the lot, with only a small percentage of broken particles. This commercial grade, if of the Honduras type; consists of that rice which does not pass through a No. 8½ screen on the shaker frame, and, if Japan, a No. 7½ screen. In passing the rice over the screens of the shaker frame the small quantity of finely broken rice which failed of separation in the brewer's reel or resulted from a slight breakage with the trumbles is removed through a No. 5½ screen and combined with other brewer's rice.

Grading Reels.—Long, revolving, cylindrical grading reels replaced in some cases the earlier shaker frames. Such a reel consisted of a framework divided equally into four sections, each of which was covered with a wire screen. The screens, which could be replaced, were of various-sized mesh, and by making substitutions the character of the separation could be fairly well controlled. Beneath each section was a trough to receive the rice which passed through the screen of that section. The grading reels are now used only to assist the more efficient cockle cylinder described in the following paragraph.

The Cockle Cylinder is by far the most valuable and widely used device for grading rice. It is a form of the machine extensively employed in removing cockle from wheat previous to its milling, and has been in use for grading rice for about 10 or 12 years. It consists of a metal cylinder, the inside surface of which contains indentations stamped or bored in the metal. The cylinder is set on an incline and propelled from the outside, and in action revolves around a supporting stationary axle, to which is also fastened an adjustable curved metal apron. The apron extends nearly across the diameter of the cylinder and throughout its entire length. The rice to be graded is introduced on the floor of the cylinder at its upper end. As the cylinder revolves, the smallest particles of rice fall into the depressions, are carried upward through a part of a revolution, and when above the suspended apron, they fall upon it. Since the apron receives all rice particles which are carried by the surrounding cylinder above its edge, the size separation of the rice may be changed at will by adjusting the position of the apron on the axle and thus raising or lowering the edge of the apron. Each cylinder is designated according to the diameter of its depressions, which, as in the case of the flat metal screens, are expressed in terms of sixty-fourths of an inch.

In most mills three cockle cylinders, Nos. 10, 12, and 14, are set up in the same framework and are operated together, and frequently two such sets are placed side by side in a double frame. It is the customary practice in milling the Honduras type of rice to conduct the ungraded rice from the shaker frame to the floor of cockle cylinder No. 10, which takes out the smallest particles and sends the remainder to cylinder No. 12 below. Broken grains of the next larger size are separated on the apron of cylinder No 12 and the remainder goes down to cylinder No. 14, which performs its work in a similar way. The rice from the apron in cylinder No. 10 is ordinarily bagged as the screenings grade of clean rice, the particles from the aprons of Nos. 12 and 14 are mixed and sold as the second head grade, and the remainder from the floor of No. 14 constitutes the fancy head grade. Each separated grade is conducted through a wooden chute to the first floor of the mill, where it is packed for the market.

The above-described separations apply only to the Honduras type of rice. The Japan type is sorted in a similar way, except that all broken particles separated by the cockle cylinders are ordinarily mixed and sold as Japan type screenings, thus making three grades instead of four.

Weighing and bagging machines. — All clean rice, except the brewer's rice and a small amount which is packed in cartons, is shipped from the mill in closely woven burlap bags, or pockets, of 100 pounds each. In many mills automatic machines for weighing the rice and sewing the filled bags have been installed with satisfactory results.

Empire Trade After the War

Views of a Great Ship Owning Community.

(The following are extracts from a preface to The Port of Hull Annual for 1916 by Councillor Wm. C. Dawson, J. P., Sheriff of the City and County of Kingston-upon-Hull and Chairman of the Kingston-upon-Hull Education Committee).

"Questions of international policy are of the most vital importance to the manufacturer, the merchant, and the shipowner, but to appreciate events in their true proportions and perspective, all parochial views must be put far from us. The development of the port and the trade of Hull must be considered as part of a great Imperial, and, indeed, a complex international question.

"A nation which has created a magnificent army of several millions of men in a few short months out of a peace-loving population, must mobilize its capital, and organize its credit, in the interests of a united Empire. Without embarking upon schemes of adventurous finance, the great banks of the home country and the Colonies by effective co-operation, backed by Government direction and guarantees, can do, and must do, much more to stimulate, to foster, and to direct into the best channels, the capital required for the development of the resources of this country and of the British Dominions beyond the seas. Increased elasticity in banking practice and complete cohesion between the banks of the Empire, insuring greater fluidity of capital, would be a much more powerful factor in increasing trade than protective tariffs, be they never so skilfully framed. The methods pursued by the German Banks in Turkey, Asia Minor and the Argentine are worthy of very serious consideration. In developing the material resources of the Empire, we ought to direct to the Colonies the surplus population of the mother country. What a difference it would have made in the present combat if the British capital invested in the countries with which we are now at war had been employed in the development of the resources of Australia, New Zealand, and Canada. Is it not possible that the man-power of the Empire would have been so great as to have made war impossible to the Kaiser and his myrmidons?

"The fiscal policy of this country must be reconsidered, reconsidered at an Imperial Council, at which all the Colonies are represented, reconsidered not in the light of settled convictions supported by the muttered shibboleths of Free Trade or of Tariff Reformers, reconsidered not by sections of the Empire as independent units, but as one united indivisible Empire determined to promote the safety and well-being of all people who dwell under our flag. Two points should always be remembered. First, taxation either direct or indirect for Imperial purposes can only be imposed on any Colony by the Colony concerned. Proposals must never be brought forward similar to those which a century ago cost us the United States of America. To re-enact the Navigation laws whereby British cargoes must be carried only in British owned ships, would in effect impose an indirect tax on the Colonies. They wish to convey their exports to British markets, and to import our goods in exchange at the lowest rates. To exclude from the Colonial carrying trade all foreign owned ships must raise freights both against ourselves and them. Secondly, if we are to remain the free market for gold and commodities (which in the main has given us the carrying trade of the world, and made us its financial clearing house) we must not, unless we are satisfied we are receiving adequate compensating advantages, impose any restrictions that will rob us of that position of pre-eminence and tend to shift the financial centre of the world elsewhere. To ensure the solidarity and stability of the Empire is, of course, immensely more important than the continuance of our financial prosperity, but these are not alternatives. With wise statemanship we may secure both."

WESTERN GRAIN INSPECTIONS.

The inspection of grain at Winnipeg and other points in the Western Dominion during the seven months ended March 31, 1916, has broken all records of previous years amounting to 232,434 cars, compared with the previous high of 158,938 cars in 1913-14, and 100,572 cars during the corresponding period in 1914-15. The following is a recapitulation of the inspections during the seven months ended March 31, 1916:

Wheat, Cars ..	17,668	193,250	78,702
Bush	21,201,600	231,900,000	88,539,750
Oats, Cars.. ..	4,186	30,274	15,395
Bush	8,581,300	60,261,700	29,250,500
Barley, Cars ..	492	6,466	3,160
Bush	664,200	8,729,100	4,108,000
Flaxseed, Cars .	409	2,124	3,064
Bush	470,350	2,442,600	3,140,600
Rye, Cars	12	111	118
Bush	12,000	111,000	118,000
Screenings, Cars	30	208	133
Bush	30,000	208,000	133,000
Speltz, cars	.....	1	.....
Total grain			
Cars..	22,797	232,434	100,572
Bush..	30,959,450	305,452,400	125,289,850

THE FARMER IS THE BIG PROSPECT.

A man whose business it is to prepare lists for automobile companies says that 70 per cent of the automobiles sold are purchased by farmers. This reinforces the signs from every side (a New York Life official says) that right now the farmer is the logical prospect for a great volume of life insurance.