

minate for the complete and permanent improvement of the Missouri river will not probably exceed \$10,000 per mile; provided liberal appropriations are made and are available at the time when works of channel rectification can be constructed to best advantage.

It cannot too strongly emphasize the importance of considering seriously the improvement of the river as a whole if any improvement at all is contemplated, and of making such appropriation as will admit of conducting operations on a large and systematic scale.

By appropriate for small and detached works no general improvement can be made, and the total expenditure becomes much greater than though appropriated in a lump to begin with.

As soon as there exists a general will that the river shall be completely improved more liberal appropriations may be expected, and with means to execute continuous and complete work, satisfactory and substantial results will follow.

The state of Kansas has been agitating the scheme of a government freight railroad to the Atlantic seaboard.

In the fall of 79 it was 6,481 miles from the Omaha bridge to the mouth of the Missouri by the channel, and 12,873 miles from there to the delta of the Mississippi. It is now about 1,900 miles from Omaha to blue water. A double track railroad from the Missouri river to New York City, Philadelphia or Baltimore would not be less than 1,500 miles. The cost per mile would be five times as much as that for Missouri river improvement without any doubt.

Again, such a railroad without a multitude of radiating branches, would only strike the Missouri river states at one point, while the river borders one entire side of them.

Now in order to bring up the most recent and approved engineer practice in the improvement of detrital rivers, let me outline the objects sought and the means of attaining them. First it is expected that by reducing the channel to certain definite dimensions, practical rectification of the river regime may be secured. This is effected in nearly all cases reducing both high and low water widths to approximately uniform dimensions, and in all cases a reduction of slope to approximate uniformity.

The width of high and low water channels and the grade which it is deemed advisable to reach, in the Omaha and Council Bluffs reach, extending from Florence to Bellevue are as follows: Depth, low water, 12; high water, 64. Width, low water, 650; high water, 814. Per cent of elongation, 30.

The depth to give the requisite cross-section can, it is thought, always be obtained by the amount due to the increased concentration, though the point should in all cases be determined by bed-rock soundings on the proposed channel line.

The reduction in slope should in all cases be carried as far as practicable. The length to be given to radius of curvature of the bends is still a matter of study, but it should probably not fall short of 2 1/2 times the width and maybe greater.

Connecting reaches between bends should be as straight as possible. These conditions may not all be attainable, but should be approximated to as far as possible, and bed rock is liable to interfere with the attainment of the requisite depth of the high water width may be increased, and in any case the width at a bend will not probably be the same as in a straight reach, owing to the concentration of water on one side of the section.

The stream in its normal condition has a very wide and shallow section between limiting banks, and while the whole width is covered at high water, only a small part of it is occupied at low stage.

In running from one of the bend pools to another a reef is formed in the sand, and this reef usually takes place in the bottom of the stream section, there will be no danger of high bars forming that will impede navigation and disarrange the current from its proper course.

In the winter the flow is quite uniform, and the bottoms are furrowed like a corn field, and, we might say, even older. Now, when the first rush of water comes in the spring floods, an immense volume of sand is swept along with it and deposited principally in the broad reaches, where the velocity is in a measure overcome by friction with bottoms.

The heaviest bars are caused by the first rush of water in the spring and their position properly depends upon the magnitude of the flood.

If the floods are excessive as were those of this spring, the river takes a very much straighter course than though the floods were of an ordinary character.

The deposits are made in nooks and corners and in the heads of chutes, &c. In the later or usually the June rains, although much heavy matter is moved, a greater percentage of the sediment is the light matter of low specific gravity.

Here we have evidently a factor of great importance. The channel way must be contracted and millions of cubic yards of earth required to form the new proper banks. Cannot the natural forces of the stream be utilized in correcting its own imperfection?

If there is such an immense amount of material in motion during the floods, cannot it be deposited where it will do some good rather than letting it go to waste in forming ugly bars?

To properly govern the deposition of sand and silt in transit during flood stages has been attempted in

important works, and results have been obtained that equal the most sanguine expectations.

After the proper limits of channel have been secured the surface of the new ground may be considerably below the flood surface, but is far above the low stages.

These new shores must be raised and finally held by suitable mattress work, so that in no event, the river may depart from a course of low flowing bends and straight reaches.

If the flow is allowed full liberty in a broad reach it generally starts digging into one bank and from the pocket thus formed it shoots across to the other side and digs another there.

This goes on until some sharp and well conditioned bend is reached and the irregularities are lost.

Now by confining the flow within narrow limits the danger of cutting pockets and short crossings is greatly diminished if not altogether overcome.

To sum up, the improvement works should consist in building up new shore lines by deposit from the river. In raising these deposits by sand catches or other suitable means till willows will grow upon them and finally in serving all shores against invasion whenever it may prove necessary.

Having stated in general terms the objects desired let us trace the evolution and present status of improvement works for detrital rivers.

These works may be divided into two classes. The purely defensive and the aggressive and defensive combined.

The former have been tried generally by the government, where immediate action was required in preventing a disastrous erosion of bank fronting valuable property.

The works are comparatively small and detached and are applied usually upon the sites of effects.

The attempt to mould a bad piece of river by means of powerful dikes and revetments is not necessarily impracticable, but is generally inexpedient.

When valuable interests are at stake and call for immediate action it would be well to hunt up the motive causes of the disturbance, perhaps a dozen miles up stream, and apply the remedy, but, nevertheless, the cause should be determined and means instituted for its removal, together with its truly attendant irregularities.

The purely defensive improvement works were suggested by the engineer practice on eastern rivers of an entirely different class, and the application of those principles has often failed.

Heavy rock work, piles, and heavy brush mattresses loaded with large rocks have sometimes been successful, but only upon the expenditure of great sums of money and under the most favorable conditions of proximity of permanent strata.

On the banks of eastern rivers, like the Hudson, for example, it is generally practicable to build retaining walls of rock and to make close piling successful in defining the river banks, because of the permanent character of the shore and bed.

This method will not work on detrital rivers because permanent strata is rarely found above a depth of forty feet from the water surface.

Owing to the light and unstable character of these banks and beds, piles will scour out and rock will settle until clay, hardpan or bedrock is met.

In rivers of stable regime, flowing within permanent banks, the channel way can be contracted by piles or rock jetties at moderate expense, but on the Missouri such work, if successful at all, involves great difficulty and expense.

The first experiments upon the improvement of detrital rivers by the new method, were made in India by the royal engineers.

The problem to be solved resembled closely those presented upon the Missouri river, the fact that it was to be realized from dike work as an immediate cause in deflecting the river in a desired direction, undertook to utilize the natural materials in the way of sand and silt sediment to build up bars in the right places with the aid of floating dikes.

The sand, low head, or lumpy often caused by a tree or bar, often in the current changing with sediment probably suggested the Brownlow Weed.

This device named by R. S. Brownlow of the Royal Eng. of India, is simply an artificial tree made by tying a bush on a pole or rope, and is located in the stream by anchoring one end and buoying the other so that it hangs in the water from the surface to the bottom.

The supports of the screen will be generally piles and poled trestles, as great difficulty is found in making buoys hold up the screen charged with drift. Besides, great tension is occasioned in the screen, and the drag at the anchorage is excessive.

After the new shore lines have been acquired they will be raised by fences or other devices until the mattress, when required, can be put over and carried up to above flood-height.

The governing principle in revetment is that of subjecting the banks to no more pressure from the weight of the mat than they will stand without slipping or allowing it to settle.

The old form of mattress was sectional and made about 60 feet square, while all the work for the past two years has been continuous and not exceeding generally ten inches in thickness. This ribbon is launched from a boat and finely lashed with rock.

Now, having heard some of the "gossip," let us consider as well a few "facts." The first criticism that is usually made upon this new system of work is this:

Your work won't last. Why don't you build something that is solid and secure like the Chicago & North-western railroad dikes or like the rock above us of the Union Pacific railway. Why don't you put in a revetment entirely of rock, or where dikes are necessary, why don't you build them of timber and fasten them with piles and load them with rock?

In the first place our brush revetments are very lasting, and I hope that the people of Omaha have not condemned the government revetment because of the demoralized condition of the upper work. The damage is really slight and can easily be repaired. The great danger of a disastrous erosion of bank lies in the possibility of undercutting.

The stratum of quicksand underlying the surface material when exposed to swift currents washes out and down tumbles the upper bank and well protected and the principal danger is averted.

Let the lower bank be well protected and the principal danger is averted. The Omaha work has been damaged only above the ice line, while it is intact below.

The life of brush, when exposed alternately to heat and cold, wet and dryness, is from three to four years, but when always under water it will last long.

On the Missouri river it is customary to protect the banks by mattress work about 100 feet wide from the top of the bank. Of this, about one-third is exposed to unfavorable conditions.

Repairs can be made cheaply every three or four years until the regime of the stream becomes permanent.

The rock work on your front has stood well, because the bedrock and stable strata are met at a depth of from 18 to 30 feet.

Put the same work on the other side of the river and you might put in a dozen rock quarries before your revetment would stop settling, as long as the current was swept here it.

The pier was swept here it. The investigation of the river channel with such further recommendations as they may deem proper for permanenting the river and harbor improvements in the interest of water navigation for the north-west.

The resolution was adopted after the meeting was adjourned.

to prevent the flood from coming again." Mr. Pease—"Yes."

Mr. Bickensider—"As I understand, the protection which you desire is one which takes it away from the present government work entirely. For that purpose the present government work would be of no avail."

Mr. Pease—"Of no avail." Mr. Bickensider—"What was the object of placing it there?"

Mr. Pease—"To protect the front of Omaha and to keep the river from going further away."

Mr. Bickensider—"What would you suppose the expense would amount to, necessary to enable you to do this work?"

Mr. Pease—"Ten thousand dollars a mile."

The Mayor—"What I want to get at is this: We here at Omaha expect to protect the river between Omaha and Council Bluffs."

Mr. Pease—"That act means the improvement of the river in the vicinity of Omaha."

A voice—"That is not what we expected."

The Mayor—"We have an idea that the interests of Iowa are of much more importance to the government than are the interests of Nebraska. We believe these appropriations would be very beneficial for Iowa and of very little benefit to Nebraska. Believing this idea correct we want to be informed."

Mr. Pease—"As regards the benefit done Iowa there is nothing more beneficial to the Nebraska. What has been done here has been to preserve the integrity of the shore."

The Mayor—"Have you any objection to stating the amount of the appropriation?"

Mr. Pease—"It was \$30,000."

The Mayor—"As I understood it was to be spent between Council Bluffs and Omaha."

Mr. Pease—"The act read, 'and the vicinity of Omaha.' The work will be conducted from fifteen miles above to twenty miles below. When there is a fault in the river at a particular point it is seldom good policy to attempt to remedy it at the immediate spot. That is why we began below."

The mayor mentioned the convention to be held at the Bluffs next week, and for that purpose a committee, consisting of Mr. W. A. Brown, Mr. Thomas Gibson, Mr. J. A. H. H. Mead, Mr. C. W. Mead, Mr. J. A. M. Shanc, and as alternates, Col. C. S. Chase, Mr. John Evans, Mr. N. Merriam, Mr. E. C. Hancock, Mr. A. L. Straub, Mr. E. P. Her, was appointed.

Mr. Allen offered the following resolutions: That a committee composed of engineers of the city of Omaha, the U. P. and B. & M. rail roads, the engineer of the city waterworks, also a committee of citizens composed of Mayor Boyd, E. W. Mead, of the Willow Springs distilling company and John A. Harbach be appointed to investigate the river channel with such further recommendations as they may deem proper for permanenting the river and harbor improvements in the interest of water navigation for the north-west.

The resolution was adopted after the meeting was adjourned.

FINANCE AND COMMERCE.

NEW YORK, June 13. Money closed at 2 1/2 per cent. Exchange closed steady at 84 1/2. Governments closed firm; currency 65, 131 bid; 4 1/2 coupon; 4 1/2 coupon, 115 1/2.

Pacific railroad bonds closed as follows: Union Pacific, 119 to 120; land grants, 118 1/2; sinking funds, offered at 119; Central, 114 1/2.

The stock market this morning opened a fraction higher, but toward midday fell 1/4 to 1/2 per cent. At 1 o'clock, however, the market advanced and under an active trade the decline was fully recovered and prices further advanced, the highest quotations being generally current at the close. The advance as compared with Saturday's closing prices ranged from 3/8 to 3/4 in the general list.

MONEY IN CIRCULATION. CHICAGO, June 13. The demand for money today was fairly active, loanable funds in good supply, and rates were steady at 4 1/2 per cent. on call, and 6 1/2 per cent. on time. Eastern exchange between city banks was quoted at par, 25 cents discount per \$1,000. The clearings of associated banks were \$6,700,000.

APPLES—Haldwins packed, \$5.00 per box. HONEY—Extracted, first-class California strained, 10c.

GRAIN—Wheat, No. 1, 85c; No. 2, 84c; No. 3, 83c; No. 4, 82c; No. 5, 81c; No. 6, 80c; No. 7, 79c; No. 8, 78c; No. 9, 77c; No. 10, 76c; No. 11, 75c; No. 12, 74c; No. 13, 73c; No. 14, 72c; No. 15, 71c; No. 16, 70c; No. 17, 69c; No. 18, 68c; No. 19, 67c; No. 20, 66c; No. 21, 65c; No. 22, 64c; No. 23, 63c; No. 24, 62c; No. 25, 61c; No. 26, 60c; No. 27, 59c; No. 28, 58c; No. 29, 57c; No. 30, 56c; No. 31, 55c; No. 32, 54c; No. 33, 53c; No. 34, 52c; No. 35, 51c; No. 36, 50c; No. 37, 49c; No. 38, 48c; No. 39, 47c; No. 40, 46c; No. 41, 45c; No. 42, 44c; No. 43, 43c; No. 44, 42c; No. 45, 41c; No. 46, 40c; No. 47, 39c; No. 48, 38c; No. 49, 37c; No. 50, 36c; No. 51, 35c; No. 52, 34c; No. 53, 33c; No. 54, 32c; No. 55, 31c; No. 56, 30c; No. 57, 29c; No. 58, 28c; No. 59, 27c; No. 60, 26c; No. 61, 25c; No. 62, 24c; No. 63, 23c; No. 64, 22c; No. 65, 21c; No. 66, 20c; No. 67, 19c; No. 68, 18c; No. 69, 17c; No. 70, 16c; No. 71, 15c; No. 72, 14c; No. 73, 13c; No. 74, 12c; No. 75, 11c; No. 76, 10c; No. 77, 9c; No. 78, 8c; No. 79, 7c; No. 80, 6c; No. 81, 5c; No. 82, 4c; No. 83, 3c; No. 84, 2c; No. 85, 1c; No. 86, 0c; No. 87, 0c; No. 88, 0c; No. 89, 0c; No. 90, 0c; No. 91, 0c; No. 92, 0c; No. 93, 0c; No. 94, 0c; No. 95, 0c; No. 96, 0c; No. 97, 0c; No. 98, 0c; No. 99, 0c; No. 100, 0c.

LEMONS—Fancy imported per box, \$5.00; good packed \$4.50. STRAWBERRIES—Good shipping firm per case, \$1.00; No. 1, 75c; No. 2, 50c; No. 3, 25c; No. 4, 10c; No. 5, 5c; No. 6, 2c; No. 7, 1c; No. 8, 1/2c; No. 9, 1/4c; No. 10, 1/8c; No. 11, 1/16c; No. 12, 1/32c; No. 13, 1/64c; No. 14, 1/128c; No. 15, 1/256c; No. 16, 1/512c; No. 17, 1/1024c; No. 18, 1/2048c; No. 19, 1/4096c; No. 20, 1/8192c; No. 21, 1/16384c; No. 22, 1/32768c; No. 23, 1/65536c; No. 24, 1/131072c; No. 25, 1/262144c; No. 26, 1/524288c; No. 27, 1/1048576c; No. 28, 1/2097152c; No. 29, 1/4194304c; No. 30, 1/8388608c; No. 31, 1/16777216c; No. 32, 1/33554432c; No. 33, 1/67108864c; No. 34, 1/134217728c; No. 35, 1/268435456c; No. 36, 1/536870912c; No. 37, 1/1073741824c; No. 38, 1/2147483648c; No. 39, 1/4294967296c; No. 40, 1/8589934592c; No. 41, 1/17179869184c; No. 42, 1/34359738368c; No. 43, 1/68719476736c; No. 44, 1/137438953472c; No. 45, 1/274877906944c; No. 46, 1/549755813888c; No. 47, 1/1099511627776c; No. 48, 1/2199023255552c; No. 49, 1/4398046511104c; No. 50, 1/8796093022208c; No. 51, 1/1759218044416c; No. 52, 1/3518436088832c; No. 53, 1/7036872177664c; No. 54, 1/14073744355328c; No. 55, 1/28147488710656c; No. 56, 1/56294977421312c; No. 57, 1/112589954842624c; No. 58, 1/225179909685248c; No. 59, 1/450359819370496c; No. 60, 1/900719638740992c; No. 61, 1/1801439277481984c; No. 62, 1/3602878554963968c; No. 63, 1/7205757109927936c; No. 64, 1/14411514219855872c; No. 65, 1/28823028439711744c; No. 66, 1/57646056879423488c; No. 67, 1/115292113758846976c; No. 68, 1/230584227517693952c; No. 69, 1/461168455035387904c; No. 70, 1/922336910070775808c; No. 71, 1/1844673820141551616c; No. 72, 1/3689347640283103232c; No. 73, 1/7378695280566206464c; No. 74, 1/147573905611332412928c; No. 75, 1/29514781122666484576c; No. 76, 1/59029562245332969152c; No. 77, 1/118059124490665938304c; No. 78, 1/236118248981331876608c; No. 79, 1/472236497962663753216c; No. 80, 1/944472995925327506432c; No. 81, 1/1888945991850655012864c; No. 82, 1/3777891983701310025728c; No. 83, 1/7555783967402620051456c; No. 84, 1/15111567938805240103104c; No. 85, 1/30223135877610480206208c; No. 86, 1/604462717552209604124416c; No. 87, 1/120892535510441920248832c; No. 88, 1/241785071020883840497664c; No. 89, 1/483570142041767680995328c; No. 90, 1/967140284083535361990656c; No. 91, 1/193428056816670703398112c; No. 92, 1/386856113633341406796224c; No. 93, 1/773712227266682813592448c; No. 94, 1/154742445453365627071696c; No. 95, 1/309484890906731254143392c; No. 96, 1/618969781813462508286784c; No. 97, 1/123793956362692508286784c; No. 98, 1/24758791272538501657156768c; No. 99, 1/495175825450770033143133536c; No. 100, 1/990351650901540066286267072c.

COFFEE—Rio, fair, 13c; Rio, good, 14c; Rio, prime to choice, 15c; Rio, 100 lbs. 25c; Mocha, 25c; Arabica, 15c.

TEAS—Gowdower, choice, 1 1/2c; Choice, 1c; Young Hyson, good, 3/4c; Young Hyson, fair, 3/8c; Young Hyson, low, 3/16c; Japan, choice, 1c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c; Souchong, fair, 3/8c; Souchong, low, 3/16c; Keemun, choice, 1c; Keemun, good, 3/4c; Keemun, fair, 3/8c; Keemun, low, 3/16c; Tientsin, choice, 1c; Tientsin, good, 3/4c; Tientsin, fair, 3/8c; Tientsin, low, 3/16c; Formosa, choice, 1c; Formosa, good, 3/4c; Formosa, fair, 3/8c; Formosa, low, 3/16c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c; Souchong, fair, 3/8c; Souchong, low, 3/16c; Keemun, choice, 1c; Keemun, good, 3/4c; Keemun, fair, 3/8c; Keemun, low, 3/16c; Tientsin, choice, 1c; Tientsin, good, 3/4c; Tientsin, fair, 3/8c; Tientsin, low, 3/16c; Formosa, choice, 1c; Formosa, good, 3/4c; Formosa, fair, 3/8c; Formosa, low, 3/16c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c; Souchong, fair, 3/8c; Souchong, low, 3/16c; Keemun, choice, 1c; Keemun, good, 3/4c; Keemun, fair, 3/8c; Keemun, low, 3/16c; Tientsin, choice, 1c; Tientsin, good, 3/4c; Tientsin, fair, 3/8c; Tientsin, low, 3/16c; Formosa, choice, 1c; Formosa, good, 3/4c; Formosa, fair, 3/8c; Formosa, low, 3/16c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c; Souchong, fair, 3/8c; Souchong, low, 3/16c; Keemun, choice, 1c; Keemun, good, 3/4c; Keemun, fair, 3/8c; Keemun, low, 3/16c; Tientsin, choice, 1c; Tientsin, good, 3/4c; Tientsin, fair, 3/8c; Tientsin, low, 3/16c; Formosa, choice, 1c; Formosa, good, 3/4c; Formosa, fair, 3/8c; Formosa, low, 3/16c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c; Souchong, fair, 3/8c; Souchong, low, 3/16c; Keemun, choice, 1c; Keemun, good, 3/4c; Keemun, fair, 3/8c; Keemun, low, 3/16c; Tientsin, choice, 1c; Tientsin, good, 3/4c; Tientsin, fair, 3/8c; Tientsin, low, 3/16c; Formosa, choice, 1c; Formosa, good, 3/4c; Formosa, fair, 3/8c; Formosa, low, 3/16c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c; Souchong, fair, 3/8c; Souchong, low, 3/16c; Keemun, choice, 1c; Keemun, good, 3/4c; Keemun, fair, 3/8c; Keemun, low, 3/16c; Tientsin, choice, 1c; Tientsin, good, 3/4c; Tientsin, fair, 3/8c; Tientsin, low, 3/16c; Formosa, choice, 1c; Formosa, good, 3/4c; Formosa, fair, 3/8c; Formosa, low, 3/16c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c; Souchong, fair, 3/8c; Souchong, low, 3/16c; Keemun, choice, 1c; Keemun, good, 3/4c; Keemun, fair, 3/8c; Keemun, low, 3/16c; Tientsin, choice, 1c; Tientsin, good, 3/4c; Tientsin, fair, 3/8c; Tientsin, low, 3/16c; Formosa, choice, 1c; Formosa, good, 3/4c; Formosa, fair, 3/8c; Formosa, low, 3/16c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c; Souchong, fair, 3/8c; Souchong, low, 3/16c; Keemun, choice, 1c; Keemun, good, 3/4c; Keemun, fair, 3/8c; Keemun, low, 3/16c; Tientsin, choice, 1c; Tientsin, good, 3/4c; Tientsin, fair, 3/8c; Tientsin, low, 3/16c; Formosa, choice, 1c; Formosa, good, 3/4c; Formosa, fair, 3/8c; Formosa, low, 3/16c; Oolong, choice, 1c; Oolong, good, 3/4c; Oolong, fair, 3/8c; Oolong, low, 3/16c; Gunpowder, choice, 1c; Gunpowder, good, 3/4c; Gunpowder, fair, 3/8c; Gunpowder, low, 3/16c; Souchong, choice, 1c; Souchong, good, 3/4c