Diameter of current-wheel, 19ft. 9½in.

Length of current-wheel (or float), 20ft. 0½in.

Area of float (or blade) submerged, 67.735 square feet.

Depth of float (or blade) submerged, 3.38ft.

Revolutions of wheel per minute at above velocity of stream, 3.96.

Number of blades in wheel. 12.

Length of pontoons, 55ft.

Height of water discharged above river-level, 51.5ft.

Quantity of water discharged, 2.5 cubic feet per second, or 1.347.840 gallons per day.

Based upon the results of the foregoing experiments, and the fact that the power increases as the cube of the velocity of the stream, the following table has been prepared by me, with a view to illustrating the capabilities of *one unit* only of the aforementioned current-pump at various velocities of the stream and at various heads or elevations above it. These results may be doubled or trebled by the installation of two or three current-wheels (units) on one pontoon, as may be required: —

Height pumped, in feet.	Velocity, 6 miles per hr. (B h p. produced, 40 97)	Velocity 7 miles per hr. (B h.p produced, 64 9)	Velocity, 8 miles per hr (B h p produced, 97 00)
	Water discharged, in Cubic Feet, per Second.		
50	3·97	6·29	9·41
100	1·97	3 11	4·66
150	1·31	2 07	3·11

(NOTE.—In these calculations a pump giving 50 per cent efficiency of the power of the current-wheel has been substituted for the inefficient centrifugal pump of the tests quoted, the B H.P. produced being that registered by a rope dynamometer at the wheel.)

It is pleasing to reflect, and a bit startling too, that the cost of these pumps is very small when compared with the cost of the old system of water-races, which has in some places broken down so completely, as the following note by an expert will show:

The cost of construction of the principal races, including their storage-dams, varies generally in Otago and Southland between £500 and £2,000 per cubic foot of water delivered per second; but in some places, including the gorge and valleys of the Clutha below Cromwell to Roxburgh, water from races is practically unobtainable. The cost of installation of one unit current-wheel plant, complete on a steel pontoon, would be about £1,800, and this would deliver at an altitude of 150ft. above the river (as based upon my recent tests) from 1.31 to 3.11 cubic feet of water per second, varying with the velocity of the current. The relative average initial cost of races and dams per cubic foot of water delivered therefrom per second is £1250, and by the current-pumping plant to an altitude of 150ft. it is £810.

The Morgan Current Pump.

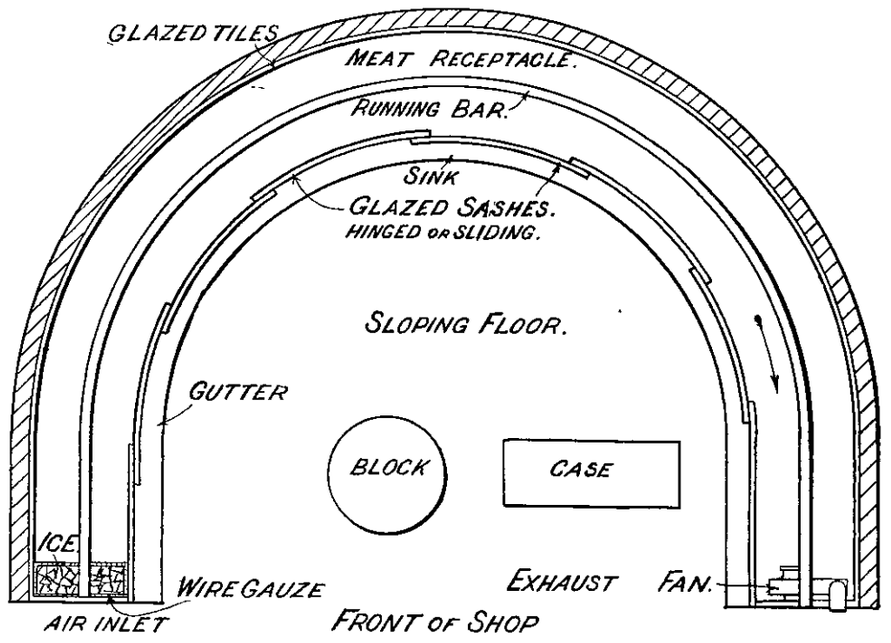
Another pump has been designed, called the Morgan and Milne Patent Current Turbine Pumping Machine. It has not got beyond the model stage as yet, but even as a model, with a turbine of only 3 feet diameter, it developed 2 brake-horse power with a current velocity only a little over five miles an hour.

The owners of the Mercedes patents—Gate Change—have announced their intention of taking action to maintain their rights.

Filth and Food.

A summer morning. One of these recent summer mornings. The morning, you understand, of genial heat, with breeze enough to keep the dust lively. The City Council has a new street-sweeper, but it doesn't seem to have been along this street this morning. There is a generous litter of horse-droppings in the road—a litter which, as the sun dessicates it, becomes one with the breeze and the dust, intent on mischievous frolic. It is not at all a comfortable thing to think about, with the day so genial and the sky so blue. Call it plain dust.

A morning, naturally, to tempt forth the ailing. Down the pavement comes a man with a hollow chest. A layman would guess that the hollow-chested man had what we call consumption; but how should a layman know. The man is a law-abiding citizen, however you take it. He does not expectorate on the pavement. He walks to the gutter, and expectorates there, as a citizen should—into a little heap or whirl of the plain litter of the road. The sun is strong.



AN IDEAL BUTCHER'S SHOP.

Another contribution to the breeze and the dust, another element in the mischievous frolic.

Over the street there is a butcher's shop, joints temptingly displayed, open to the breeze and the dust, open to the flies—a clean enough butcher's shop, as such shops go in New Zealand—white tiles, white aprons, all the rest of it. And the meat looks tempting to the housewife, who has no thought of the plain dust, and the dessicated litter, and the hollow-chested man across the way.

There is a baker's cart near by. It is open at the back. The loaves are exposed to the breeze and the dust—newly-baked loaves, warm and absorbent. The carter's hands are not immaculate. The dust whirls and eddies playfully. The hollow-chested man has turned a corner, and is keeping the law in another street. Who cares?

Generally speaking, all New Zealand butcher's shops are open to the dust like that, and all fishmongers; and bread is generally delivered in just that way, unwrapped. One or two fishmongers are showing their wares under glass; but they are finnicking people, faddists. What does the public care?

And one or two expose their wares under running water, which makes the fish sloppy and tasteless. The public does not like tasteless and sloppy fish. Naturally not. If a fellow passes coughing up tubercles, the public doesn't know. Naturally not.

There are only one or two properly fitted butcher's shops in New Zealand. A properly fitted butcher's shop should have all the meat under glass, securely kept away from dust and contamination, exposed only to a current of clean air. The sketch-plan will give you an idea. The shop would cost no more built that way than built in the ordinary way that the flies like. Why should butchers consider the public and cheat the flies, so long as the public doesn't care? Why?

All bread, meat, fish, all food supplies, should be wrapped before delivery. There should be no chance of contamination between the shop and the consumer. And the wrapping should be of clean, wholesome, new paper. No newspaper should be permitted to enter into this scheme, whatever its shade of politics. The thing may sound absurd to the conservative; but the public has every right to demand and insist that its food shall be supplied as clean as scrupulous care can keep it.

No excuse should be permitted in expiation of the offence of the butcher who serves tubercles with his chops. The remedy is really in the hands of the public; but as long as the public sleeps, the remedy will not be applied.

The milk service is very much better in Wellington than it was; but it is still very far from perfect. Here, however, there is a hopeful sign. Eighteen or nineteen of the biggest vendors have joined in paying the salary of an inspector who is entirely under the control of the Health Department. He inspects their milk just as he inspects any other person's. He is in no sense in their employ.

The milk supply should be as pure as scrupulous care can keep it. Impurity here strikes directly at the children. If the public really cares about the children, there must soon be an end of this general apathy. Filth and food should be kept apart. They have nothing in common.