### **Notes**

This section of *SHALE* provides an opportunity for contributors to present the partial results of ongoing research, publish less-than-normal-length articles, and provide "interesting facts".

# Sand, firewood, and the stars at night—by Mr. E.L. Wisty

Here's an interesting fact. Walking on the beach at Taylor Bay last summer, I saw an empty plastic Pepsi bottle. Not liking garbage just lying about, I picked it up, noting that its capacity according to the label was 600 mL (millilitres). It was already partially full of dry, white sand, so I topped it up, trying hard to keep out bits of seaweed and other miscellaneous crap.

When I got home, I opened up the bottle and

#### The sums:

Assume the grains of sand have a diameter of 0.35 millimetres and are spherical. Then their volume is  $4/3 \times \text{pi} \times (0.35/2)^3 = 0.0224$  cubic millimetres or  $22.4 \times 10^{-12} \text{ m}^3$ .

The density of silica is 2650 kilograms per cubic metre; which is  $2.65 \times 10^6 \text{ g} \cdot \text{m}^{-3}$ .

Hence the weight of a grain is  $22.4 \times 10^{-12} \times 2.65 \times 10^6 = 59.4 \times 10^{-6}$  g.

The volume of sand in the bottle was 600 mL, which is  $6.00 \times 10^{-4}$  m<sup>3</sup>. It weighed 1.01 kilograms. The density was therefore  $(1.01 \times 10^3) \div (6.00 \times 10^{-4}) = 1.68 \times 10^6$  g•m<sup>-3</sup>, which is 1680 kilograms per cubic metre.

The volume of a cord of wood is 128 cubic feet, which is  $3.62 \text{ m}^3$ . The weight of this volume of sand is therefore  $1.68 \times 10^6 \times 3.62 = 6.08 \times 10^6 \text{ g}$ .

The number of grains in this volume is  $(6.08 \times 10^6) \div (59.4 \times 10^{-6}) = 1.02 \times 10^{11}$ .

shook out a few grains and looked at them with a small magnifying glass. Some grains were black, because of the iron in them I suppose, but most were milky, translucent, or clear, as silica and feldspar usually is. I could see, using a ruler, that the size of the grains ranged between about 0.1 and 1 millimetre in diameter. After peering at them for a while, I settled on 0.35 millimetres for an average diameter, which means a volume of roughly 0.0224 cubic millimetres a grain.

I then looked in my desktop reference book and found that the density of silica and the common feldspars, which is what the sand mostly is if you don't count the air, was about 2650 kilograms per cubic metre. Multiplying this by the estimated volume, I calculated that each grain of sand on the beach at Taylor Bay weighs, on average, about 60 micrograms. That's just about the same as the gravitational pull of the planet Mars on the average human body. Amazing, eh! But wait! There's more.

I took the bottle of sand down to the kitchen and weighed it. From its weight (about a kilogram), and knowing, from the label, its volume, I calculated that the density of the sand in the bottle was 1680 kilograms per cubic metre. That's less than the density of silica and feldspar of course because of all the air gaps between the grains.

Now, last fall, I took delivery of several cords of firewood, so I know, after stacking them, just how much a cord of firewood is. One full cord (if you can get it) measures  $8 \times 4 \times 4$  feet, and its volume is therefore

128 cubic feet, just under 5 (cubic) yards, or 3.62 cubic metres. If this volume had been sand, it would have weighed 6082 kilograms (about 6 tonnes). The number of grains of sand from the beach at Taylor Bay in a volume equal to that of a cord of firewood is therefore 6082 thousand divided by 60 millionths. This is ten to the power eleven—one followed by eleven zeros—100 000 000 000—one hundred billion grains of sand!

Now comes the very interesting fact. One hundred billion is about the number of stars that astronomers estimate there are in the Milky Way. So for each grain of sand in a pile of sand the size of a cord of wood, there is a shining star in our galaxy. And we can see, how many other galaxies like it? Perhaps a billion, certainly hundreds of

millions. That's enough sand to create a pile as big as Mount Benson—a cubic mile. Each grain of sand a star in the Universe. And, just think, you'd have to walk, nonstop, for a billion years just to cover the 4.5 light-years to the nearest one. It's an amazing fact!

Did you know by the way that the human intestine is 28 feet long...?

EDITOR'S NOTE: I remember Mr. E.L. Wisty with great affection. Mr. Wisty (Peter Cook), back in the 1960s, used to sit in his shabby raincoat on a park bench with fellow philosophic down-and-out (Dudley Moore) and there he would relate, in his monotone drone, interesting facts. Mr. Wisty specialized in the Universe and all that surrounds it. ◊

#### The net shed at Page's—by Phyllis Reeve



Phyllis Reeve

In 1946, the young Page brothers were in their third year as proprietors of the fish camp at Silva Bay. Jack, who had a wife and two small children, was ready to put down roots in the rocky cliffs of Gabriola Island. His brother Les, a bachelor then, and for many years after, lived and worked aboard their boat, the Sea Rock, fishing in the Skeena River and packing fish back across the strait to Galiano Island.

Until well into the 1930s, Galiano, where the brothers had grown up, and where some of the Page family continued to live, had been the site of three herring salteries, employing mostly Japanese workers, and producing products for the Asian market.

The double tragedies of depression and war put an end to the industry, and the salteries were dismantled. Les bought lumber salvaged from the salteries and hauled it home to Gabriola. Building partly on land, but mostly on pilings, he used the lumber to build a wood-framed shed to store fishing nets, boat parts, and miscellaneous supplies.

The shed still survives at the marina where it comes in useful for storing dinghy sails and harbouring refugee kittens. Now a favourite target for tourists' cameras, it holds slivers of the history of two Gulf Islands. ◊

## Come and gone—by Barrie Humphrey

We know the names of the settlers who remained on Gabriola for several generations—older residents remember them, or geographic features of the island have been named after them. Others however, now forgotten, lived here for a short time, then moved on or died without descendants who were willing to live and work here. Their passage is marked only by their names on a few pieces of official paper, or in the directories of the time.

One such was Robert P. Dombrain(e), who pre-empted land on Gabriola in 1870. His name is listed in the Nanaimo directories of 1869 and 1871, then disappears without a trace. We received what seemed might be a good lead as to where he came from when Nicholas d'Ombrain of New Brunswick e-mailed us to say that he had found a version of his family name on the museum

website. He says the name and family are Huguenot in origin, and can be traced to a Jacques d'Embrun who fled France from Rouen in 1572, just before the St. Bartholomew's Day Massacre. He believed that Robert P. might have been the same Dombrain who arrived in Melbourne, Australia on board the SS *True Briton* in September of 1868, aged 21.

Nicholas's Robert P. left no other trace in Australia and if he had been the Gabriola Dombrain, he would have come fairly directly from Australia to Vancouver Island, arriving sometime in 1869, pre-empting on Gabriola in 1870 (at age 23) and disappearing again after 1871. Alas, it proved not to be so. At the same time that Nicholas discovered another Robert Dombrain, this one in South Africa, we discovered that our Robert married a Sechelt woman named Lucy in Nanaimo in 1865.

So what happened to the family? Did they move to Washington or Oregon when BC became a province in that year? Many who held republican views did. Did Robert fall victim to drowning or disease, before deaths began to be officially registered in 1872? Or did they move on to another frontier?

Because they lived in an isolated area, during a time when there were few public records and no local newspaper, we may never know. Unless that is, a descendant of the *real* Robert Dombrain, reading this, writes to tell us the rest of the story.  $\Diamond$ 

#### A French note—by Nick Doe

The first permanent, non-native settlement in the lower-mainland and Vancouver-Island region of BC was at Fort Langley on the Fraser River. It was founded in 1827. The list of Hudson's Bay Company (HBC)

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