In 1905 grandfather purchased water company A. Aird. Why from a Scot?

- Construction of water/sewer system 1865-1872
- Why did design group visit London?
- Why did Scottish A. Aird get contract to build?
- Why Polish sign on company A. Aird headquarters in June 1945?
THE LONDON CHOLERA EPIDEMIC OF 1854

John Snow: Scientific Analysis by Mapping
LONDON, AUGUST 1854

- With industrial revolution, London had grown to 2.4 million people, the largest city in the world.
- In poorer districts human crowding: many persons to one room
- Lack of sanitation: overflowing cesspools, basements full of night soil.
- Stench and foul air permeated the city, particularly the poorer areas
- Night soil workers would remove waste and dump into the Thames.
- Drains empty into Thames
THE BLUE DEATH IN SOHO

- September 2, 1854: a tailor at 40 Broad Street felt
  - An upset stomach
  - Then sudden and explosive watery diarrhea and vomiting
  - Due to water loss, his eyes were sunken
  - He suffered agonizing cramps
  - His skin became leathery, lips and face turned blue
  - His blood pressure dropped, heartbeat irregular
  - He is dead after 24 hours.

- After three days: 127 people dead
- In the next week ¾ of the people fled the area
- After 10 days 500 people dead
How do you get cholera?

- Miasma (Bad Air) [Malaria]
- Medical orthodoxy in Europe, China and India
- 95% of US doctors believed miasma transmission
- Miasma is Greek: Pollution
- Poisonous vapor or mist transmits disease: cholera, chlamydia, Black Death are passed via foul air
- Germ theory did not exist (Pasteur 1860-1864)
**Edwin Chadwick**

- Reformer: Poor Laws
- Father of public sanitation
- Laid foundation for government intervention in public health
- Commissioner of the Metropolitan commission of sewers
- Miasmatist: “All smell is disease” until his death in 1890.
Medical doctor-Anesthetist: administered gas to Queen Victoria at first chloroform-assisted royal birth

- Observed outbreak in 1831
- Outbreak in 1848-49: On Sep 22, 1848 a sailor from cholera infested Hamburg, John Harnold, checked into lodging house in Horsleydown. A few days later Mr. Blenkinsopp took over the room and got the disease on Sep 30. Then cholera spread and two years later 50,000 were dead.
Why did cholera affect the alimentary and not respiratory tract?

Why did night soil men not get more often sick than others?

Why some far away from stench were as much affected as some closest to it?

Why Londoners South of Thames 3 to 8 times more likely to get sick than North of Thames?
When Soho outbreak, Snow was ready to investigate

- Most deaths close to Broad Street pump
- Questions remained:
  - Why did none of the 70 employees of the Lion Brewery at 50 Broad Street get sick?
  - Why did only 5 people of 535 of the St. James Workhouse get sick and not 100 (20%)?
  - Why did Susannah Eley living in noble Hempstead away from Broad Street pump get sick?
The local council had the Broad Street pump handle removed on September 8, 1854.

In 1855 Snow testified to Parliament

Lancet: oldest, most respected, best known medical journal wrote editorial
Lancet:

Why is it then that Dr. Snow is so singular in his opinion? Has he any facts to show proof? No!...But Dr. Snow claims to have discovered that the law of propagation of cholera is the drinking of the sewage-water. His theory, of course, displaces all other theories. Other theories attribute great efficacy in the spread of cholera to bad drainage and atmospheric impurities. *Therefore*, says Dr. Snow, gases from animal and vegetable decomposition are innocuous! If this logic does not satisfy reason, it satisfies a theory; and we all know that theory is often more despotic than reason. The fact is, that the well whence Dr. Snow draws all sanitary truth is the main sewer. His *specus*, or den, is drain. In riding his hobby very hard, he had fallen down through a gully-hole and never since been able to get out again.
Sewer System: Discharge in the East

- June 1858: “Great Stink”
- Ambitious engineering project, like Eiffel Tower and Brooklyn Bridge
  - North of Thames: three main lines running East
  - South of Thames: two main lines running East
  - Operational in 1865
  - Empty into Thames
    - away from city center
    - only on outgoing tide
  - Still being used today
- Largest and most advanced in the world