An engraving of old London Bridge.

Mr Brazell has taken this opportunity to delve into earlier chronicles to find what London's weather was like before 1841. The conclusion is that the weather has not changed much—his earliest record is of a "rain of blood" in AD 4 lasting 5 hours, attributable to very fine sand or volcanic debris in the atmosphere, and similar to the red rain, laden with Sahara dust, which fell on London on July 1 this year.

A rare feature of London's climate has been the freezing of the Thames—an event which is well documented by Mr Brazell. During twenty-three winters between 1260 and 1814, the ice on the river was thick enough to allow pedestrians to cross from one bank to the other. It became the custom for frost fairs to be held on the frozen Thames, starting from small beginnings in the winter of 1309–10 when people danced around a bonfire built on the ice, to the great frost fairs of the 17th, 18th and 19th centuries, when the frozen river supported streets of shops and booths. In the winter of 1688–89 a coach with six horses was driven from Whitehall almost to London Bridge, and during the winter exactly 100 years later a frost fair extended from Putney to Rotherhithe. The last time the Thames was completely frozen over was in 1814. The ice became solid enough for people to cross on January 31, and by February 2 a frost fair was well under way. On February 6 the ice melted.

The reason for this, it seems, has much to do with the demolition of old London Bridge in 1831. Its massive piers and narrow arches formed an effective blockade to ice floes carried down from the upper reaches of the river, and the resulting build-up of ice facilitated the complete freezing of the river. The increased tidal flow permitted by the new bridge now discourages blockage of the river by ice. Mr Brazell lists other factors which operate against the freezing of the Thames: marshes along the river banks which used to be a source of ice floes have been drained, and streams such as the Tyburn, the Holborn and the Fleet, which once brought ice into the Thames, now flow in conduits. The construction of the embankments allows the river to flow more freely, and the locks and weirs at Teddington trap much of the ice. But the most important factor these days seems to be the discharge of warm water from the power stations and factories which have sprung up along the banks of the Thames. Measurements in 1963 showed that while the temperature of the water in the estuary was 32° F, between Tilbury and Tower Bridge it reached between 46° and 50° F.

MANPOWER

Biologists' Pay

THE Institute of Biology has carried out an investigation of what its members are paid, and the results are published in the latest issue of the *Institute of Biology Journal*, **15**, 82; 1968. Similar surveys have been made by the Royal Institute of Chemistry, the Institute of Mathematics, the Institution of Metallurgists and the Institute of Physics, and it is hoped that the returns from all five institutes can be combined to produce figures for qualified scientists as a whole.

In all, 4,475 questionnaires were sent to fellows, members and licentiates. By the closing date, 2,855 cards had been returned—a 64 per cent response. Of the completed cards, 206 were not used because members were unemployed, retired, or were not receiving a full salary. (There were twelve unemployed men compared with forty-nine unemployed women.) The table shows some of the figures quoted referring to total remuneration—basic salary plus secondary income from examiners' fees, royalties, part-time consulting and so on. Comparison of the 1968 and 1965 figures shows that there was an increase of 10 per cent (weighted average) in salary levels. The differences between median salaries for fellows and associates of the Royal Institute of Chemistry, and fellows and members of the Institute of Biology, are hardly significant to age 35. Although chemists have a higher salary in the ages 36–55, after 55 the position is reversed.

BIOLOGISTS' SALARIES (£ p.a.)

Age	Median for biologists 1961	1965	1968	Percentage increase 1965–68	Median for chemists 1968
26–30	1,080	1,400	1,656	18	1,665
31–35	1,400	1,800	2,032	13	2,100
36–40	1,707	2,087	2,313	11	2,515
41–45	1,925	2,600	2,700	4	2,950
46–50	2,250	2,700	2,995	11	3,120
51–55	2,650	2,840	3,038	7	3,176
56–60	2,375	3,710	3,660	—1	3,300
61–65	3,200	3,800	4,000	5	3,200

Comparisons were also made between fellows and members of the Institute of Biology in various employment—industry, university, Government service (including research councils), technical colleges and schools. Up to the age group 36–40, there are no striking differences in the levels of earnings. For example, in the age group 26–30, the median pay ranges between £1,411 for government employees and £1,798 for biologists in technical colleges. In the age group 46–50, biologists in university have a slight edge over those in industry; on the average, those in universities receive £3,426 compared with £3,400 for industrial biologists. The government employees follow with £3,107. Teachers in schools and technical colleges lie far behind with £2,175 and £2,235 respectively in the 45–50 age group.

UTILITIES

Load of Rubbish

COLLECTION and disposal of solid wastes cause many headaches in cities the world over, but probably nowhere is the problem greater or more efficiently dealt with than in the United States. Americans are notorious wasters as well as over-zealous packers, particularly of food products. For these and other reasons, some means of dealing with refuse other than simply passing it to the garbage collector has been necessary for many years. Kitchen sink grinders are common in many apartments and so are incinerator systems, but with conservative estimates placing the output of rubbish at 4·5 pounds per head daily, there is always a need for the improvement of existing methods of collection, reduction and disposal.

With this in view, a team of engineers and scientists in New Haven, Connecticut, is shortly to start a project housed in three tall, typically urban buildings in which methods and equipment for handling solid waste which are now used can be studied. Specifically, the study will include the investigation of an incineration system in one structure, a compacter system in another, and a "wet pulper-presser-shredder" system in the third. The project is expected to last for 3 years, and is divided into three phases each lasting 12 months. The contract will be carried out by a committee of the Building Research Advisory Board of the National Research Council.

During the first phase—funds for which have already been provided by the Public Health Service of the Department of Health, Education and Welfare—the extent to which existing systems contribute to air pollution will be investigated. Attention will be paid to personnel and power requirements as well as to the cost, efficiency and effectiveness of existing systems and their acceptance by the public. During the first phase the weight, volume and composition of refuse generated by these systems will also be determined. New equipment for reduction and disposal will be installed during the second phase, and the performance of this equipment in handling both dry and wet refuse will be analysed. The composition and volume of water flowing through drainage pipes will be investigated and these data compared with data obtained during the third phase following the installation of sink grinders. In this way, the value of sink grinders in relation to other reduction techniques can be estimated.

The most recent figures available for the amount of refuse collected under all local authorities in Britain are for 1962–63, when an average of 337 tons was collected per thousand population (approximately 2 pounds daily per head) at a total cost of more than £36 million. Kitchen grinders are gradually coming into use in British blocks of flats and maisonettes, but far too much reliance is still placed on the conventional dustbins, paper sacks and other storage containers. If local authorities cannot hasten the introduction of more modern methods of refuse disposal—and some of them might even save money this way—perhaps plumbers could see this as a way of making fortunes.

FRANCE

Medical Hecatombs

DOES France face a shortage of doctors or not? A battle of statistics is being fought out in the French press over the issue, and conflicting opinions are reminiscent of the notorious miscalculation of the Willink report, which in 1957 foresaw a surplus of doctors in Britain and recommended a 10 per cent reduction in medical students. Only 4 years later the Platt report was discovering a likely 10 per cent shortage of doctors.

French students are not the only people who have been using the predicted lack of doctors as a stick with which to belabour the academic authorities. The failure rate at French medical schools is extraordinarily high—43 per cent in the first year, 27 per cent in the second and 14 per cent in the third. This represents an overall failure rate of 65 per cent, which critics have compared for its pointless waste to a hecatomb, the ritual sacrifice of 100 oxen made by the ancient Greeks. The medical examinations are alleged to be too strict and in any case to have little bearing on a candidate's fitness for the medical profession.

An inquiry into the hecatombs was commissioned by *Le Monde*, before the events of May and June. Its investigator, Professor M-F. Jayle of the Paris faculty of medicine, reported last week that the alleged strictness of the exams is a myth. The toll taken by the exams is a mere 5·5 per cent in the first year, falling to 2·5 and 1·5 per cent in the next 2 years. Professor Jayle concludes that "almost all the students who devote themselve to medicine are not hindered in their progress when they are sufficiently persevering". The implication is that the students who drop out for reasons other than failing