

The method evolved using the instrument for the qualitative examination of steels was frequently found useful as a preliminary to exact analysis by the Metallurgical Section.

Almost the only work on organic material was the spectrographic examination of beer and worts. The results were not definite, and only speculative suggestions as to adding trace elements to promote yeast growth could be made. Damaged wood from an aileron was examined, and the presence of elements not found in sound wood pointed to contamination with drips of dirty water which induced fungal growth.

The speed of spectrographic methods is illustrated by the one used for testing for toxic elements in plastic utensils. Filings from the samples were made into 50 mg. pellets and arced on graphite electrodes. No elements considered particularly toxic were found, although in a few samples zinc, barium, chromium, and cobalt compounds were present as fillers or pigments.

The method evolved for testing for the presence of sea-water residues in cases of corrosion was applied to a sample of badly corroded galvanized wire. In this case there was much sodium present. From spectrographic and chemical work it appeared likely that corrosion was due to sodium hydroxide dissolved from the cargo by sea-water, but in the presence of so much sodium the evidence for sea-water as the primary cause was not conclusive.

The relief from war work meant that some time could be given to some work of geological interest. The boron content of some thirteen samples of manganese was determined for the Geological Survey. The method used by B. Wasserstein on South African ores could not be improved on. In contrast to this worker's discovery in regard to braunite, the content of boron in the New Zealand ores—manganites with one psilomelane—was low, the highest being 0.04 per cent. A method was worked out for the determination of lithium, rubidium, and caesium in mineral waters. The small glass instrument is used with plates sensitive to the infra red. The contents of lithium in waters from hot springs is significant and its determination should not be neglected in complete analyses.

The work of the photographic technician has been supervised by this section. Most was copying work for Head Office and Dominion Laboratory. Work for other Departments was spool developing and printing. There was some photography of specimens, such as fruit, and corrosion products. Assistance in photomicrographic work was given to the Paint and Metallurgical Sections.

The volcanic outbreak at Mount Ruapehu offered an opportunity for chemical work on volcanic products, but owing to the acute shortage of staff no advantage could be taken of this. An official visit was made to the volcano by a member of the staff in the company of Mr. J. Healy, Volcanologist at Rotorua, towards the end of the most active period. Sulphur dioxide could be detected in the steam cloud coming over the rim of the crater. From information from various workers on effects of the ash from the volcano, it appears that corrosion effects, poisoning of fish, and tainting of butter might have been due to sulphur compounds in the ash. It would be desirable in any further outbreak to make a survey of the distribution of sulphur compounds, but on this occasion there was no staff to spare, and it was even too late to obtain and examine a fresh sample of ash.

MINERALS

The number of scheelite samples analysed (forty-five) was less than in 1944, because of the withdrawal of Government subsidy on production. Assays for gold and silver also declined somewhat. On the other hand, there was a great increase in the number of high-accuracy complete analyses of minerals (separated in the pure state by New Zealand Geological Survey). Minerals tested for the possible presence of uranium were thorite, chromite, garnet, monazite, ilmenite, sphene, and allanite. Wanganui ironsands from both beech and dune deposits were analysed for iron content of their magnetic and non-magnetic fractions, for inclusion in a report by New Zealand Geological Survey.