

alkaline hydrates; alkaline carbonates, acids, HCl, H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub>, HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub>, H<sub>2</sub>C<sub>4</sub>H<sub>4</sub>O<sub>6</sub>; haloid salts, HCN, KCN, I, As<sub>2</sub>O<sub>3</sub>, SO<sub>2</sub>. (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>+5H<sub>2</sub>O).

Text-book: Park's "Laboratory Instructions in Assaying and Practical Chemistry," 7s. 6d.

*Theoretical Chemistry.*—(Lecturer, Mr. W. A. MacLeod, B.A., B.Sc.)

*Principles of Chemistry and Chemical Philosophy.*—Atoms, molecules, vapour-density, quantitative, chemical formulæ.

*The Elements.*—(1.) Their history, occurrence, preparation, properties, uses. (2.) Compounds of the elements, their history, preparation, properties, uses, &c.

*Metallurgy of Gold and Silver.*—(Lecturer, the Director.)

(1.) Ore-crushing and -pulverising machinery—*a*, rock-breakers; *b*, stamps; *c*, mills, rolls, &c. (2.) Metallurgy of gold—*a*, amalgamation on copper-plates, in pans, &c.; *b*, chlorination processes and operations; *c*, leaching processes (Cassels's, &c.). (3.) Metallurgy of silver—*a*, smelting and amalgamating ores; *b*, smelting—reduction with lead and fluxes; *c*, amalgamation in pans with mercury—use of chemicals; *d*, leaching with solvents—sea-water or brine, ammonia, sodium hyposulphite, alkaline cyanides; *e*, oxidizing and chloridizing roasting.

Text-books: Eissler's "Metallurgy of Gold and Silver"; Gordon's "Mining and Engineering."

*Physics.*—(Lecturer, the Director.)

Fundamental ideas of matter and energy; conditions of matter; gravitation; mechanical powers; sound; light; heat; magnetism; electricity; chemistry; physiology and health.

*Practical Astronomy.*—(Lecturer and Instructor, the Director.)

The ecliptic; equinoxes; meridians; longitude; latitude; altitude; declination; right ascension; azimuth; use of Nautical Almanac; polar distance; zenith distance; hour-angle; sidereal time; mean time; solar time; parallax; refraction; retardation; acceleration; convergency of meridian; determination of meridian by star and sun observations, by single altitudes and greatest elongation of circumpolar stars; use of star charts; calculation of hour-angle, azimuth, and altitude of celestial bodies for any time and place; determination of latitude by meridian altitudes; determination of time by star transits and sun observations.

*Mechanical Drawing.*—(Instructor, Mr. E. J. Williams.)

Use of scales; printing and lettering; outline drawing; shading; colouring; drawing to scale from copies and objects portions of machinery and woodwork, showing plans, elevation, and sections.

*Special Classes* are held for the instruction of candidates for the Government mine-managers', battery superintendents', and engine-drivers' certificates. First term—First Monday in February to 30th April; second term—9th May to 20th August; third term—9th September to 20th December. Registration of membership—10s. per annum; class fees—5s. per term for each subject taken up.

*Scale of Charges for Public Assays and Analyses.*

					£	s.	d.
Bullion assays	...	...	...	...	0	5	0
Assays of quartz, tailings, or concentrates	...	...	...	...	0	5	0
Examination and determination of rocks and minerals	...	...	...	...	0	5	0
Assay of lead- and tin-ores, each	...	...	...	...	0	5	0
" iron- and manganese-ores	...	...	...	...	0	10	0
" copper- and antimony-ores	...	...	...	...	0	10	0
" zinc-, mercury-, and bismuth-ores	...	...	...	...	0	10	0
" gold- and silver-ores, with parting assay	...	...	...	...	0	5	0
Analysis of limestone and calcareous freestone	{	complete	...	...	1	0	0
		partial	...	...	0	10	0
" coals and fuels, each	...	...	...	...	0	10	0
" rocks and soils	{	complete	...	...	2	0	0
		partial	...	...	1	0	0
" fireclays and slags	...	...	...	...	1	0	0
" manures	...	...	...	...	2	0	0
" waters	{	complete	...	...	3	0	0
		partial	...	...	2	0	0
" nickel-, cobalt-, and chrome-ores	...	...	...	...	0	10	0
" concentrates	...	...	...	...	1	10	0
" complex sulphide ores, &c.	...	...	...	...	1	10	0

*Experimental Plant.*

Reports of working tests of parcels of gold- and silver-ores, concentrates, and tailings, from 1 to 3 tons:—

(1.) By Cassel cyanide process: Wet- or dry-crushing—*a*, by percolation; *b*, by agitation. (2.) By amalgamated copper-plates. (3.) By amalgamation in pans: Wet- or dry-crushing—*a*, by raw amalgamation in charges; *b*, by Washoe process with chemicals (*a*, hot pan-amalgamation; *b*, after chloridizing roasting). (4.) Chlorination: Small barrel tests.

Cost of treatment (minimum charge): £5 per parcel not exceeding 1 ton; £3 per ton for tailings.