

Alchemy under James IV of Scotland *

JAMES IV of Scotland was one of the most intelligent princes in Europe at the beginning of the sixteenth century. He had an active and inquiring mind, and sought to extend his knowledge by observation and experiment. His interests included medicine and surgery, physiology, alchemy, and even psychology. Thus, in 1493, he tried to determine by a direct experiment the nature of that "primitive tongue" which Ben Jonson, at a later day and in jocular mood, supposed to be High Dutch. "The king gart [caused] tak ane dum woman and pat hir in Inchekeytht [island]", wrote Lindesay of Pitscottie, "and gaif hir tua young bairnes, and gart furnische them of meit, drink, fyre and candell, clathis [clothes], witht all uthir kynd of necessaris, desyrand to know quhat langage thir bairnes wald speik quhene they came to lauchfull aige. Sum sayis they spak goode hebrew bot as to my self I know not."

James's excursions into alchemy were probably determined by his interest in medicine, because of the potent medicinal and rejuvenating virtues which were ascribed to the Philosopher's Stone. His chief associate in a prolonged series of alchemical experiments was a certain John Damian, an ingenious and personable Italian or Frenchman. Under Damian's inspiration and direction, James established Scotland's first research laboratory in Stirling Castle.

James provided his alchemist with an emolument and the necessary leisure for research by creating him Abbot of Tunland, in Galloway. The new ecclesiastical dignitary preferred the smells of his laboratory to the odour of sanctity, and feared the effect of the laboratory smoke upon his costly religious vestments.

The accounts of the Lord High Treasurer of Scotland from 1501 to 1513 throw some interesting light upon the nature and cost of the materials which Damian and his associates used in their attempts to prepare the *quinta essentia* (Philosopher's Stone, or Elixir of Life). Among them were gold, silver, quick-

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silver, aqua vitæ, saltpetre, sal ammoniac, litharge, salt and sugar. The prices of apparatus, the wages of the laboratory attendants, and even the cost of the alchemist's attire, are detailed in the Treasurer's records.

Three kinds of aqua vitæ, or whisky, are indicated by the adjectives "small", "ordinary" and "thrice-drawn". Although in the strange Scotland of James IV whisky must have been a rare drug reserved mainly for medicinal purposes, the Abbot of Tunland and his collaborators in the Great Work were able to secure and find uses for surprisingly large amounts.

Among occasional visitors to the Stirling laboratory was one Broun, a master "potingair of Sanctandrois". Skilled in the distillation of "waters" perfumed with essential oils, and also in the primitive sugar "potingry" of those times, this worthy apothecary was the unconscious prototype of the St. Andrews chemists of a later age.

The Abbot's attempts to achieve the Stone were interrupted in 1507, as a result of another of his spectacular activities. In the quaint language of Bishop Lesley: "This Abbott tuik in hand to flie with wingis; and to that effect he causet mak ane pair of wingis of fedderis". Equipped with these movable feathered wings, he took off from the lofty battlements of Stirling Castle for a flight to Paris; "bot shortlie he fell to the ground and brak his thee bane". Nothing daunted, the courageous experimenter ascribed his downfall "to that thair was sum hen fedderis in the wingis", which yearned and coveted the midden and not the skies: if the wings had been made entirely of eagles' feathers, they would have exerted a natural tendency to soar into the heavens!

The alchemical experiments in Stirling Castle were continued until 1513, when the interest of the Scottish crown in alchemy came to an untimely end with the death of James IV upon the tragic field of Flodden. A century and a half later this interest in science found a rebirth in two of James's distant descendants—Prince Rupert of Bavaria and King Charles II.

Aeronautical Research in Australia

THE growth of civil aviation and the necessity for increased attention to Air Force requirements led the Australian Government last year, at the instance of the Council for Scientific and Industrial Research, to invite Mr. H. E. Wimperis, retiring director of research to the Air Ministry, to visit the Commonwealth to examine the existing situation with a view to the inauguration of aeronautical research. His report was presented in December last and its recommendations have been generally approved by Cabinet.

It was desired that such facilities as might be provided for aero-engine work should be extended to cover automobile engines: hence the first recommendation provides for an engineering research establishment at a suitable centre (almost certainly

Melbourne), equipped for experimental work in wind tunnels, for engine tests for both aircraft and automobile use, and for physical tests of aircraft instruments and other apparatus. The laboratory will be administered by the Council for Scientific and Industrial Research, the programme of research, under a civilian superintendent, being supervised by an Australian Aeronautical Research Committee with an independent chairman. Its membership will include official representatives of the military and civil aviation departments, of meteorological services and radio communications, together with non-official members having special scientific and technical qualifications.

So far as practicable, use will be made of existing facilities at universities and in defence laboratories,