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Contributors

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with the author's amplification

E. J. HOLMYARD

4

Abu' l-Qāsim al-'Irāqī

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N. vi. Abu

Abu' l-Qāsim al-'Irāqī.

Since writing the Introduction to my edition⁽¹⁾ of the 'Kitāb al-'Ilm al-Muktasab' of ABU'L-QĀSIM AL-'IRĀQĪ, I have been able to collect further information concerning this Muslim chemist; he still remains, however, a somewhat shadowy figure. My sources are mainly two : (a) an Indian lithographed edition, without place or date but apparently about 1890, of his 'Uyūn al-Ḥaqā'iq', and (b) a copy of his two books 'Al-Aqālīm al-Sab'a' and 'Al-Kanz al-Afkhar' from the MSS. in the Sultaniyya Library at Cairo (V. 276 and V. 387). This copy was made for me by the scribe MAḤMŪD EFF. ḤAMDY and seems to have been carefully executed. I have not seen the original MSS., so that it is not desirable to publish the texts at the moment, nor to place too much reliance upon 'minutiae'. For the same reason, I have given in the present article no more than a general rendering of the passages quoted ; fortunately the text is on the whole comparatively unambiguous and I do not think there is likely to be any serious discrepancy between the version I give and the author's intention.

I have also thought it well to draw attention (a) to a list of alchemical « Decknamen » and apparatus which AL-'IRĀQĪ gives in the Kanz al-Afkhar, and (b) to the existence of mediaeval Latin versions of several passages from the 'Muktasab'. In the following pages I shall refer to my edition of the latter work simply by the letter M.

1. **Al-Aqālīm al-Sab'a.** — Two MSS. of this book are extant. One, as stated above, is in the Sultaniyya Library, Cairo V. 276, while the second is contained *inter alia* in the British Museum MS. Add. 25,724. The latter, of which I have used both the original and a photographic copy (white on black), is only a fragment, beginning abruptly on fol. 27 recto rather more than half way through the book. This is unfortunate, since the most interesting part from the present point of view is the prologue, for which I have had to rely solely upon my copy of the Cairo MS. The British Museum MS. is, however,

(1) GEUTHNER. Paris, 1923. See *Isis* VII. 124-8.

useful for collation of the later portions, and since it is in itself a somewhat remarkable production, a few words about it may not be out of place. In the *Catalogus codicum MSS. qui in Museo Britannico asservantur*, Part II, London, 1846, page 691, the MS. is thus described.

Codex chartaceus in fol., ff. 63, saec., ut videtur, XVIII exaratus, inconibus pictis instructis.

I. — **Abu' l-Kāsim al-Irākī.** Tractatus alchymicus. Init. [Arabic type in original] 'Al-ḥamdu lillāhi khaliq 'uqul nufus al-ruḥāniyya wa mu-faḍḍiliha'. Auctor in proemio ait, disciplinam ibi se tractare hieroglyphicam — 'wa inna hādha al-'ilm alladhī huwa 'ilm al-barbawīyyu — arcana scil. artis alchymicae a monumentis Aegyptiacis desumpta.

Et quidem refertus est liber innumeris animalium hominumque iconibus, operationes alchymicas significantibus, atque scripturis cabbalisticis, quas auctor ab antiquis Aegypti monumentis se descripsisse profitetur.

In proemio neque auctoris nomen proditur, nec operis titulus, sed in fine legitur: 'tamma al-kitāb al-ma' ruf bi kitāb al-aqālīm al-sab' a hdat al-ṣūr al-tashābīh ta' lif al shaikh al-'alim al-'ulāma ABU' L-QĀSIM AL-'IRĀQĪ'. — Absolvitur liber, qui dicitur Liber Septem Climatum cum figuris et iconibus, auctore Shaikho doctissimo ABU' L-QĀSIM AL- IRĀQĪ,

Subnectunter fragmenta quaedam alchymica itidem instructa: Discursus Abbatis PETRI, Episcopi Atrib urbis et Amlīj: 'Maqāla min qaul anbā PATRUS usqf madīnati Atrib wa Amlīj'... *Fol.* 35.

Tractatio PETRI Ikhmimensis Episcopi ad Surias (Severum) filium: 'Tadbīr PATRUS al-Ikhmīmī li waladihi Sūriyas', *fol.* 36, et alia quaedam ejusdem argumenti sine auctoris nomine.

II. — Opusculum alchymicum, quod HERMETI TRISMEGISTO attribuitur, et in templo Ikhmimensi, 'barba Ikhmīmī', repertam et cognitum fuisse traditur, *fol.* 45 Init. 'Qāla al-ḥakīm man afshā sirr al-rabūbiyya kafara a'ādhanā Allāhu ta'āla min dhālika.

Opus dicitur inscriptum fuisse al-Malāṭīs, i. e., Corpus Arcanorum, 'al-malāṭīs wa ma'nāhu jāmi' al-asrār'.

Subnectitur schema alphabetorum cabbalisticorum, quod Shaikho 'ABD AL-RAḤMAN AL-BASTĀMI debetur.

III. — BALAMAGHŪS AL-MAGHRIBI. Tractatus compendiosus *de lapide philosophorum* in gratiam SULAIMAN 'UTHMANIDAE Sultani (A. H. 926-947) conscriptus, iconibus duabus munitus, *fol.* 53. Init. 'Al-ḥamdu lillāhi alladhī khalaqa min 'ālam al-fasād basharan'. In fine: 'Kamilat risala maulana al-sultān Sulaymān'.

Subnectitur fragmentum iconibus pictis instructum, quo herbae quaedam in arte alchymica usurpatae, planetisque septem attributae, describuntur : Şifatu'l-ḥashā'ish al-masūba lil-sab'ati kawkāib.

The volume seems to be a compendium of various extracts which appealed to its writer, and is noteworthy for the remarkable figures, in gold and colours, which adorn it. The majority of these figures are allegorical and of little value from a scientific point of view, but a few contain drawings of alchemical apparatus and operations. On folios 15-17 there is a list of alchemical « Decknamen » for iron, tin, copper, lead, mercury, sal-ammoniac and sulphur. They are for the most part identical with those given in the Dresden MS. 210 (Risala fi 'Ilm al-Kīmiyā), published by WIEDEMANN and RUSKA; (2) the points in which the two lists differ I have already described in *Nature*. (3) The most important difference is that the present MS. contains the names for sulphur, which are missing from the Dresden MS.; they run as follows :

Fol. 16 recto. — Description of Sulphur and the names given to it by the masters of the art of Alchemy. — 'al-lat'ī'. (The reading is quite definite, but unfortunately I have been unable to find the word in any lexicon; it may perhaps be a corruption or modification of 'al-lathā', the gum or resin. I have not met it in any other Arabic chemical treatise). — 'al-wāqid', the burning. — 'al-'aqrab', the scorpion. — 'al-muḥriq', the inflammable. — 'al-nār', the fire. — 'al-aşfar', the yellow. — 'al-sham', the wax. — 'dhū al-janāḥīn', the winged. — 'al-şab', the indicator (but possibly a diacritical point has been omitted and the true reading may thus be 'al-şabgh' the dye). — 'al-'arūs', the bride. — 'al-şamgha', the gum ('ḍād' is written in error for 'şād'). — 'al-khiḍāb' the dye ('nūn' written in error for 'bā'). — 'al-zuḥār', the moaner (possibly because of the crackling sound given by a crystal of sulphur when held in the hand). — 'al-ṭalq', the talc (gypsum, etc.). — 'al-dhahabī', the golden. — 'al-'alam', the sign or token. — 'al-bayraq', the flag. — 'al-jabal al-aşfar', the yellow mountain. — 'al-ḥajar al-muşaffaḥ', the smooth stone (no doubt an allusion to the well-known soapy feel of sulphur). — 'al-mubayyiḍ' the whitener. — 'al-musawwid', the blackener. — 'al-mulayyin', the softener. —

(2) *Sitzungsber. d. Phys.-Med. Sozietät in Erlangen*. Band 56 (1924), pp. 17-36.

(3) January, 1926.

‘zandarikh, sandarach. — ‘al-ḥimār’, the donkey (or, perhaps, the redness. See Dozy, *Suppl.*, *sub voce*).’

On BALĀMAGHŪS AL-MAGHRIBI (*supra*) I have been able to discover very little, and since he lies outside the scope of the present article I will confine myself to one or two remarks upon him. The work of his described above is found also in the Bibl. Nat. MS. *Arabe* 2620, ff. 58v. — 62r., but here the author is named as MAGHŪSH AL-MAGHRIBI. This MS., like that of the British Museum, is of the XVIIth. century. HAJJI KHALIFA, III. page 436, mentions a ‘Risāla fī al-Kīmiyā’ (Letter on Chemistry), written by the Shaikh MUḤAMMAD IBN MUḤAMMAD AL-MAGHŪSH AL-MAGHRIBI [al-Tunusi, who died 947 A.H. (1540-1541 A.D.)] for MULLA ABU’ L-SA’ŪD, beginning ‘Al-ḥamdu lillāhi alladhī khalaqa min ‘ālam al-fasād, etc. — an opening identical with that of the British Museum MS., so that there can be little doubt that the two are the same.

The ‘Risāla’ occurs also in a collectaneous MS. volume in the possession of Mr. A. G. ELLIS, who has been good enough to allow me to use this precious volume. The MS. is written in a « Moghreby » hand and is probably of the early xviii. or late xvii. century; it contains the following treatises on alchemy and is in a good state of preservation :

I. — *Ff.* 1-30. Verses from the ‘Shudhūr al-Dhahab’ (4) of IBN ARFA‘ RA’s with a commentary compiled from the author’s answers to the questions of his pupil ABU’ L-QĀSIM AL-ANṢĀRĪ. It is imperfect at the end.

II. — *Ff.* 31-44. A treatise by AIDAMIR IBN ‘ALĪ AL-JILDAKĪ, imperfect at the beginning. No author is mentioned, but it is clear that AL-JILDAKĪ wrote the book as he cites other works of his as « mine ». A note inside the front cover describes this fragment as *Kitāb al-shams al-munir fī taḥqīq al-Iksīr*, a book which is ascribed to AL-JILDAKĪ by HAJJI KHALIFA (No. 7660) and which is frequently cited by AL-JILDAKĪ himself. There is a MS. of the work in the British Museum (Add. 7722, *fol.* 160).

III. — *Ff.* 45-48 *recto*. A tract by « MARY the Copt », beginning ‘Qālat MARYA khudhū al-ṣafwa min al-kribīt wa al-zaibaq’ (MARY said: Take the best [part] from sulphur and mercury).

(4) *The Particles of Gold*, an alchemical poem by BURHĀN AL-DĪN ABU’ L-HASAN ‘ALĪ IBN MŪSĀ IBN ARFA‘ RA’s, who died about 1197 A. D.

IV. — *Ff. 48 verso-61 recto*. A treatise by MARY, daughter of SABA, the Copt, beginning: 'Hādhā Kitāb Nasīha MARYA bint SABA al-Qubtiyyu il talmīdhiha' (This is a book of advice of MARY, the daughter of SABA, the Copt, to her pupil). It is obviously spurious, since the supposed authoress refers to a conversation she had with JĀBIR IBN ḤAYYĀN!

V. — *Ff. 61 verso - 62 recto*. An alchemical recipe.

VI. — *Fol. 62 verso*. A recipe describing a method of dissolving all metals.

VII. — *Ff. 63 verso - 73 recto*. A treatise by 'AL-ḤAKĪM MAGHŪSH' (see above).

VIII. — *Ff. 73 verso - 92*. A selection of verses from the 'Shudhūr al-Dhahab of IBN ARFA' RA'S, and from a poem by « AL-SHAIKH », with a commentary by AL-JILDAKĪ. That the commentary is by AL-JILDAKĪ appears from his practice of citing his other works.

IX. — *Ff. 93-96*. Two verses from the 'Shudhūr al-Dhahab', with a commentary by the author's descendant, ABU' L-'ABBĀS AḤMAD IBN 'ALĪ IBN AḤMAD IBN 'ALĪ IBN MŪSĀ IBN ARFA' RA'S AL-ANDALUSĪ.

The 'Risāla' of MAGHŪSH AL-MAGHRIBĪ is of interest in that it gives (*fol. 67* of Mr. ELLIS's MS.) the traditional transmission of alchemy from ADAM to MAGHŪSH himself, ABU' L-QĀSIM AL-'IRĀQĪ forming one of the links. The relevant passage reads as follows:

Alchemy « was revealed by God to ADAM (peace be upon him!), then to his son SETH, then to HERMES, then to NOAH, then to SHEM, then to HAM, then to FALAGH (5) then to DAVID, then to SOLOMON, then to ALEXANDER (6), then to HIPPOCRATES (7), then to PYTHAGORAS, then to SOCRATES (8), then to ARISTOTLE, then to GALEN, until it reached to Islam by [various] means, and was spread abroad among the prophets. AL-GHAZĀLĪ mentioned it in his letter 'Al-Maḍnūn' (9) with traditions and verses [of the Qur'ān]. Then [it came] to the Commander of the Faithful, 'ALĪ IBN ABĪ ṬĀLIB (may God honour him!), then to KHĀLID

(5) The traditional great-great-grandson of NOAH and ancestor of ABRAHAM. Cf. MAS'UDĪ, *Les Prairies d'Or*, tome 1, pp. 79 and 81 (*ed.* BARBIER DE MEY NARD, Paris, 1861).

(6) ISKANDER.

(7) BUQRĀṬ.

(8) SUQRĀṬ.

(9) Is this the 'Kitāb al-Maḍnūn bihi 'an ghairi ahlihi' mentioned by BROCKELMANN, *Gesch. d. arab. Lit.*, 1, 425 ?*

IBN YAZĪD, then to JA'FAR AL-ŠĀDIQ, then to JĀBIR, then to AL-RĀZĪ, then to IBN WAḤSHIYYA, then to AL-TUGHRĀ'Ī, then to AL-MAJRĪTĪ, then to AL-MAHDĀWĪ (10), then to AL-ANDALUSĪ (11), then to AL-'IRĀQĪ, then to AL-JILDAKĪ, then to certain of the moderns [in the margin is written « AL-MUKHTAFĪ »] (12). Now, praise be to God, it is fully authenticated and the whole world points to its truth. Since that is so, it is necessary to strive after it, and, God willing, I will explain it with the greatest possible clearness and with no distracting enigmas. »

The subject of the transmission of alchemy according to the Muslim authors I hope to treat more fully elsewhere; it throws a good deal of light upon many cultural problems of early Islam. Meanwhile we may now turn to the Book of the Seven Climes, which provides interesting details of the author's other writings.

The Book of the Seven Climes (13). — The full title is « The Book of the Seven Climes, upon the Science called The Art [of Alchemy], by the Shaikh, Imām, and Philosopher ABU'L-QĀSIM MUḤAMMAD IBN AḤMAD AL-SIMĀWĪ, known as AL-'IRĀQĪ. May the Exalted God have mercy upon him! »

(10) Possibly ABU'L 'ABBĀS AḤMAD IBN 'AMMAR AL-MAHDĀWĪ AL-TAMMIMĪ, who died about 1038. Cf. BROCKELMANN, I. 411.

(11) See note 4.

(12) Cf. H. KH., III, p. 588, where mention is made of the the 'Siraj al-ẓulma', « lucerna obscuritatis. Commentarius in opus *Hikmet*, auctore Sheikh ABU AMRU ABD-EL-KERIM IBN ABI[LHASAN] YAHYA BEN ABI AMRU OTHMĀN, vulgo MUḤTEFĪ dicto ». This work does not appear to be extant, and I know nothing of its author except that he is not infrequently mentioned by AL-JILDAKĪ, and that BERTHELOT (*La Chimie au moyen âge*, tome III, p. 41) quoting from the preface of a work by AL-MAṢMŪDĪ written in 1489-1490, gives the titles of the 'Siraj al-ẓulma' and a second work called *The Thirty Letters*. H. KH. reads AL-MUḤTAFĪ, but the author is invariably given by AL-JILDAKĪ as AL-MUKHTAFĪ.

In MS. 'Kīmiya' 150', a collectaneous volume of the Royal Library at Cairo, there is a commentary on the 'Risāla' of « BALAMAGŪHS AL-MAGHRIBĪ, which he wrote for the Sultan SULAIMĀN THE 'UTHMĀNĪ. It is embellished with figures and illustrations ». The same volume contains a work entitled « The Book of Theory and Practice, on the Divine Art, including (' wa huwa yashtamila ālā ') the Book of the Seven Climes, by the Shaikh ABU'L-QĀSIM AL-'IRĀQĪ. »

(13) This book is mentioned by HAJJĪ KHALĪFA, V. no. 9879 : « Kitāb el-acālīm el-seb'at, liber de septem climatibus. Compendium a Sheikh ABU' LCĀSIM MOHAMMED BEN AHMED SIMĀWĪ IRĀCKĪ libri ' Mukteseb ' auctore conscriptum, quod ita incipit : Laus Deo rerum novarum creatori primo etc. Intelligit sub climatibus metalla ». The text of the opening words of the Cairo MS. agrees with that given by H. KH.

The preamble, which is the only section with which I shall deal here, is as follows :

« In the Name of God, the Compassionate, the Merciful. May God bless and preserve our Lord MUḤAMMAD and his family and companions!

« The Shaikh, Imām and accomplished Philosopher ABU' L-QĀSIM MUḤAMMAD IBN AḤMAD AL-SIMĀWĪ, known as AL-'IRĀQĪ (may the Exalted God have mercy upon him !) said : Praise be to God, the first Creator, before whom Time and Change were not. Know, may the Exalted God have mercy upon thee, that books upon alchemy are numerous, and that although they are renowned and celebrated on account of their writers' habit of talking extravagantly about their subject-matter, and of veiling their secret in abstruse language, they are nevertheless despised as forming a part of natural science, since they proceed therefrom.

« Now the world and its inhabitants are maintained only by the service of some of us to others. This is not because of exaltedness of rank or of distinguished ancestry, but because Divine Providence has made a portion of mankind dependent upon others. In this connection, there are two varieties of dependence, namely dependence for technical ability and dependence for subsistence. Dependence for technical ability is of two orders, that of the rich man and that of the poor man. For if a man relies upon himself in everything, many things throng upon him, since a man needs the builder to guard him from heat and cold, and also a silk-mercator to make clothing for him to protect him ; [he needs also] a smith to shape for him implements for agriculture and carpentry, and other tools. Man has need also of many other things in order that his comfort and life may be complete. Arts are thus diversified among men for this reason, and some men are dependent upon others while some are independent. For some men are driven to the arts for the reason that they cannot supply their own [technical] needs, and other men are forced thereto in order to relieve their necessities. Indeed, if all men were equal in prosperity the employment of some by others would be a matter of difficulty, but when a man is in straits he is of necessity driven to accomplish the desires of the affluent in order to obtain from them the wherewithal to live (14). ¶

« When philosophers realised this, they became intensely secretive and obscure concerning the preparation of the Elixir, and continually

(14) *Lit.* « in order to seek from him that which is in his hand ».

went to excessive lengths in metaphors. The original enigmas were made more and more obscure generation by generation, until at last their books and their wisdom reached JĀBIR IBN ḤAYYĀN THE ŠŪFĪ. He indeed was the most niggardly and most enigmatical of them all, and he opened a gate which no one had ever opened before him. This is the method which has caused mankind to fall into a shoreless and unstable sea. His object was to teach mankind the Theory by way of Practice, because he saw that men in his time were throwing away the books of the philosophers and turning aside their faces and their ears from the remembrance thereof, not to say the obeying thereof. And he realised that this meant the disappearance and corruption of the Science, for every science whose traces are not preserved by the multitude of her followers soon becomes lost and joins the company of vanities. When this excellent man saw that, he introduced this method to the people, because it indicates the other ways and means, and he asserted that anyone who follows it shall attain his desire and the fulfilment of his need.

« Then he spoke enigmatically concerning the composition of the External and the Internal, meaning by the Internal the animal and by the External the mineral. Then he spoke darkly in certain of his books, saying that in the External there is no complete tincture and that the complete tincture is to be found only in the Internal. (15)

« Then he spoke darkly in certain of his books saying, Verily we have made the External nothing more than a veil over the Internal. Then he spoke darkly in certain of his books saying in the course of his speech that the Internal is like this and like that, and he did not cease from this kind of behaviour until he had completely confused all except the most quick-witted of his pupils. Then he spoke darkly in certain of his books saying, By God! I will impart neither little nor much of this Science to thee, meaning that there was no real practical information in the « practical » methods he was explaining. Then at times he would bring forward the wonderful words of the sages and their strange parables, but when he quoted them he would not explain one single word thereof, because he was so jealous [of this knowledge].

(15) For JĀBIR on occult and manifest properties, see the selection of his works published by BERTHELOT, *passim* (*La Chimie au moyen âge*, III, Paris, 1893). Cf. also the 'Rutbatu'l-Ḥakīm' in various places. And compare too Aristotelian ideas as expressed in the *De generatione et corruptione*.

« And, by God! I do not blame him, for it has been said that an author cannot measure out in his book except according to the measure with which his starry chance (16) has dowered him. Whoso has been given generosity will reveal, and whoso has been given niggardliness will not reveal, meaning that he will conceal. And I say,

*Man is moved by the Destiny of God,
So how shall a young man excel if that power fail him?
— Yea, by God! though virgin gold were given him,
And the mercuries, made as permanent as solid earth. (17)*

« GALEN, also, said that the [nature of] the soul follows the constitution of the body. In short, the man [JĀBIR] acted in a way peculiar to himself: no one else acts in the same way. Those who came after him followed his example in using enigmatical methods of expression.

« His books became spread abroad in the hands of men, seekers (18) increased, and the Science became honoured after having been despised and exalted after having been humiliated. Men have become persistent in testing [the methods given in his books, and when they do not find satisfaction in them they say that obstacles of Fate and Destiny have prevented] accomplishment, or that the operation was badly performed. Yet they might hear JĀBIR saying, « It is as though I were with thee [when thou scannest my books and dost test the methods given in them. Thou dost not find that which thou wast promised and so thou castest the books to right and to left and then dost abuse him who wrote them. O fool! What debt of truth have I to thee that I should expose to thee all the treasures of the world? » So he speaks in his books to their readers and to those who test the methods given therein. Is not this an admonition to the intelligent adept, that that which is exposed [to the vulgar is not that which is intended, and that that which is intended is what is buried in the interior of the words?

« So when those who came after him followed his example and the adepts pursued this path, until at last their books and their sayings

(16) 'al-naṣbatu'l-falakiya', *lit.* heavenly arrangement, horoscope. An interesting use of the word 'naṣba'. Cf. Dozy. *Supplément*, *sub voce*.

(17) The fixation of mercury was one of the steps on the road to transmutation.

(18) *I. e.*, students of alchemy. The somewhat disjointed nature of the immediately preceding passage is found in the original.

reached me, I also desired to open a gate to men, in³ which there should be a kind of demonstration by pictures, for indeed enigma in pictorial form is simpler than enigma in words. In this book there is an interpretation of my previous books, in each of which I put hints that are not in any of the others. Each of them is, however, independent of the others and stands by itself. [I note this] because the Sages had a habit of making book dependent upon book and one writing upon another. (19)

« The³ first book which I wrote I called *The Book of Knowledge Acquired concerning the Sowing of Gold*. (20) When the wise seeker understands the hints which it contains they will enable him to reach a level at which, by his very arrival there, the [mighty treasure of God is open to him. In this book I aimed at three objects, namely, to decide [whether the Elixir has a real existence, and if so, whence it may be obtained, and how. And I spoke [plainly therein about the inner meanings of enigmas and the method of explaining them.

« The second book I called 'Zubdatu'l-Ṭalab fī Zar' al-Dhahab' (21) (*The Cream of the Search, upon the Sowing of Gold*) in which also I answered three questions, proving in it that which I had not proved in the first.

« The third book which I composed was a Commentary upon the 'Shudhūr al-Dhahab' (*Particles of Gold*). (22) in which I explained the dark sayings. My composition of this book has reached to the end of the rhyme of 'Ain, (23) and if I am granted leisure and life I will comment upon the remainder, God willing. In this commentary I have not departed from the text of the sayings of the Philosophers. The author of the 'Dīwān' (al-Shudhūr) modelled his book

(19) No doubt a sly thrust at JĀBIR, who was one of the worst offenders in this respect. In the preface to his 'Kitāb al-Bayān', for instance, he says that it will be found that some of his books explain others, Cf. also the epilogue to the *De investigatione perfectionis*: « Sapiens ergo artifex in nostris studeat voluminibus, colligendo nostram dispersam intentionem, quam in diversis locis proposuimus, ne malignis seu ignaris publicetur ».

(20) The title here given differs slightly from that usually accepted (zir' instead of zirā'a) but the meaning is practically the same.

(21) Apparently not extant.

(22) Cf. note 4.

(23) Cf. page 416, where it will be seen that this commentary was probably finished.

upon the pattern of the Sage ARES (24) and of THEODORUS (25) and of KHÂLID IBN YAZID, (26) and the inner meaning of his words is clear to everyone who examines them with the eye of initiation. (27) In my commentary I have given his meaning. The man took the whole of Theory and Practice and placed them in his Odes altogether, and the commentary is similarly arranged.

« The fourth book which I composed I called ' 'Arf al-Abir fî 'Ilm al-Iksîr' (*The Perfume of Saffron, upon the Knowledge of the Elixir*), (28) upon the obscure allusions of AL-RÂZÎ concerning the « Stone ». I have explained in it AL-RÂZÎ's intended meaning concerning the « Animal » and have established the nature of the Essence (*jauhar*) to which he intended his indications to refer.

« The fifth book which I composed I called ' Kitâb al-Durar al-Makhtûm bi al-Şûr ' (*The Book of the Pearls sealed with Figures*), (29) and my purpose in writing it was to solve four problems, viz., (i). With what means [is the Elixir to be made]? (ii) From what substances? (iii) Does [this substance exist]? (iv) How [is the operation to be carried out]? The first question, *With what means?* is particularly considered in the above-mentioned book, and I do not refer to it in any other except by slight allusions.

« The prologue of the book (30) I made a picture and the conclusion also I made a picture (31) and a balance; every one who is pure of

(24) *I. e.*, Horus.

(25) On THEODORUS, see BERTHELOT, *Collection des anciens alchimistes grecs*, III, 4.

(26) The^o Umayyad prince, died 704 A. D., the traditional founder of alchemy in Islam.

(27) *Lit.*, bi 'ain al-ḥaḳīqa', with the eye of truth; but here 'ḥaḳīqa' is used in the mystical sense of initiation. Cf. Dozy, *sub voce*, and see also Massignon, *Essai de lexicque technique de la mystique musulmane*, page 13 (Paris, 1922).

(28) Apparently not extant.

(29) Mentioned by HAJJÎ KHALIFA (see p. 415), but no copy is known to me.

(30) *I. e.*, the ' Kitâb al-Durar '.

(31) ' Şûra ' is generally used in the sense of portrait or figure-picture, hence the separate mention of the drawing of the balance. This appears to be the most reasonable explanation of the phrase, which would no doubt explain itself if one could see the actual book. In connection with this list of AL-'IRÂQÎ's books it may be noted that H. KH. (III. n° 4593) mentions an additional title: « Hall el-romûz we Fat'h acfâl el-konûs, solutio aenigmatum et serarum thesaurorum apertio, auctore ABU'LCÂSIM AHMED BEN MOHAMMED IRÂQÎ. Tractatus de variis scripturae veterum characteribus, quibus doctrinas suas et arcana in thesauris celabant. » I can trace no copy of this.

spirit and noble of nature will understand what I mean to convey. This present book is called 'Kitāb al-Aqālīm al-Sab'a fī al-'Ilm al-Mausūm bi al-Ṣan'a' (*Book of the Seven Climes, on the Science called the Art [of alchemy]*). It contains a commentary upon all that at which I have hinted in my previous books, and I have made it in the form of tales and parables struck out by informative pictures; it is, in fact, a commentary upon that which is sought ».

The gist of ABU'L-QĀSIM AL-'IRĀQĪ's argument is quite clear. Briefly expressed it is as follows : For the maintenance of the social order mutual service is essential, since not all men possess the technical ability to satisfy their needs. Should the knowledge of the method of preparing the Elixir become common property, everyone would be rich and would therefore not need to work; hence the community would soon cease to exist. It is thus necessary to cloak the science of alchemy in obscure language, in order to prevent its dissemination among the vulgar. The enigmatical expression of the alchemists is due to their realisation of this fact. But when men tried to follow these dark sayings literally, and failed to obtain satisfactory results, there was a reaction against alchemy and the science fell into disrepute. In order to restore interest in it, without at the same time revealing too much, JĀBIR IBN ḤAYYĀN introduced the so-called « Practical » method. This, by giving what were apparently clear and simple instructions, served to maintain enthusiasm for the subject, but in point of actual fact it was still only the initiated who could attain success or properly understand JĀBIR's real intention.

AL-'IRĀQĪ's own aim was to express the secret of alchemy by means of allegorical pictures, which he considered to be easier of interpretation than the usual written enigmas.

The argument that the secret of transmutation must not be disclosed because it would have serious effects upon the social order is, of course, one of the most popular with the alchemists. Its naïveté may justifiably give rise to grave suspicion of the honesty of those who advance it, but it must be remembered that in political economy the Muslims were notoriously simple-minded. AL-'IRĀQĪ's interpretation of JĀBIR's attitude should be compared with the remarks of the pseudo-MASLAMA AL-MAJRĪTĪ in the 'Rutbatu-l-Ḥakīm', some account of which was given in *Isis* in 1924 (32). A study of JĀBIR's works has led me to the conclusion that while he undoubtedly

(32) Vol. VI, pp. 292-305.

believed in the possibility of transmutation he was by no means wholly obsessed by the search for the Elixir, but spent a great deal of his time in genuine experimental work which he describes in clear and quite unequivocal language. I am glad to be able to quote, in support of this view, a letter from Professor H. E. STAPLETON, whose knowledge of JĀBIR's writings is very extensive. He says, « You are certainly quite right in ascribing to JĀBIR the great advance that took place in early Arabic times in what may be called Scientific Alchemy » (33). There is no doubt that JĀBIR was inspired by the genuine scientific spirit, a characteristic which he shared with the great RHAZES; after the time of the latter true science suffered a gradual corruption among the Muslims, although the lowest depths were not reached until the days of mediaeval Europe.]

AL-'IRÂQÎ's list of his books shows us that [the *Muktasab* was his first, a statement which agrees with the fact that in the *Muktasab* he makes no reference to any earlier work. None of the other books he cites seems to be extant, and I have nowhere found any mention of them, beyond the following notices in HAJJĪ KHALĪFA : III. 218 (n° 5015). « 'El-Dorer El-Makhtūmet bi'lsower', margaritae figuris obsignatae, auctore ABU'LCÂSIM IRACKI, qui multa scripta composuit. Compendium in capita dispositum, quod definitionem, probationem, materiem et rationem Alkimiyae complectitur ». HAJJĪ KHALĪFA mentions also (VI, page 304, n° 13599) a work which he describes as follows : « El-Nejât we El-Ittisâl bi ain el-Hayât, effugium et adventus ad vitae fontem. Scripsit Sheikh ABU'LCÂSIM MOHAMMED BEN AHMED IRACKI auctor Mukteseb, et ita orsus est : Laus Deo, qui peculiariter eos, qui cognitione Dei spiritali imbuti sunt, subtilitatibus arcanorum suorum donavit etc. » I have found no further reference to this book, which is presumably later than those previously mentioned. BERTHELOT (34), quoting from the preface of the book entitled *Al-Wāfi fī Tadbīr al-Kāfī*, by ABŪ 'ABDALLĀH MUḤAMMAD IBN ABU 'L-'ABBĀS AḤMAD IBN 'ABDU 'L-MĀLIK IBN MUḤAMMAD AL-ḤASANĪ AL-MAṢMŪDĪ, says that the author mentions having read, among others, the following books: « 15. 'Tuḥfat al-Tadbīr li Ahl al-Tabṣīr' (« Cadeau de l'opération offert aux gens clairvoyants ») and two letters, by AL-'IRÂQÎ ; 16. Commentaire du 'Chodzoured-dzeheb' (Shudhūr al-Dhahab, The Particles of Gold, see p. 412). This also is by AL-'IRÂQÎ. AL-MAṢMŪDĪ

(33) Private communication to the author.

(34) *La Chimie au moyen âge*, III, p. 41.

states that he finished the composition of his book on the 6th. of January, 1490. It seems that AL-‘IRĀQĪ was granted the life and leisure that he hoped for, to finish his commentary on the ‘Shudhūr’. (35) The ‘Tuḥfat’ is unknown to HAJJĪ KHALĪFA, and no copy of it is extant, as far as I am aware.

II. ‘Uyūn al-Ḥaqā’iq. — MSS. of this work, which deals with magic, are comparatively common. I give a list of them in my edition of the *Mukṭasab*. (36) The lithographed edition is a small octavo of 48 pages of yellow paper, and in general appearance resembles the alchemical books lithographed for MIRZA MUHAMMAD SHIRAZI, the Bombay bookseller, in the last decade of the nineteenth century; it does not, however, bear any date or place or publisher. The book is divided into 30 chapters, of which n° 24 is devoted to « simples » and n° 27 to the (magical) properties of minerals. Some account of it was given by STEINSCHNEIDER in his *Zur Pseudepigraphischen Litteratur des Mittelalters*, (37) but it has never been fully studied. Its importance for the present purpose is that (1) it describes its author as ABU’L-QĀSIM AḤMAD IBN MUḤAMMAD, known as Hadrushāh al-Simawī, and (2) it contains the following chronological information: The Ḥakīm ABU’L-QĀSIM AḤMAD IBN MUḤAMMAD, known as AL-‘IRĀQĪ, said: « To continue; I have placed in this book only that which was spoken of by the Elders and the Masters of Experiment among the Sages and Philosophers and the Masters of the ‘Nawāmīs’ (38); and I did not compose this book until after I had studied 40 quintals of the books which contain the secrets of the Caliphs. This was at the time that the treasure of AL-MU‘IZZ LI-DĪN ALLĀHĪ, in the possession of the Turkish dynasty, was opened by AL-MU‘IZZ the Turkoman. »

Of the two variants of AL-‘IRĀQĪ’s name, viz., AḤMAD IBN MUḤAMMAD and MUḤAMMAD IBN AḤMAD, the latter is by far the more common and is therefore probably correct. The designation ‘Hadrushāh’ occurs in this one place only. From the second quotation just given, we are able to date AL-‘IRĀQĪ a little more closely than has been possible

(35) Cf. note 23.

(36) Page 4.

(37) Page 52. STEINSCHNEIDER erroneously assigns AL-‘IRĀQĪ to the XVth. century (um 1446).

(38) Cf. STEINSCHNEIDER, *op. cit.*, p. 53. ‘Nawāmīs’ is the plural of ‘nāmūs’, the Greek νομός.

hitherto. ABU TAMÎM MA'AD, who took the title of AL-MU'IZZ LI-DÎN ALLÂHI when he ascended the throne in 341 A. H. (943 A. D.), was a distinguished patron of learning, himself well versed in science and philosophy. IBN KHALLIKÂN (39) says of him, « EL-MOIZZ was highly intelligent, resolute and lofty-minded, an accomplished scholar, and a good astronomer (or astrologer). » I presume from AL-'IRÂQÎ's statement that when, in 648 A.H. (1250 A.D.), the Mamlūk Sultan AL-MU'IZZ 'IZZ AL-DÎN AYBAK came to the throne, he threw open to scholars the treasures of AL-MU'IZZ LI-DÎN ALLÂHI's scientific library.

As previously noted (40), the British Museum copy of the 'Uyûn al-Ḥaqa'iq' mentions the name of the ruling Sultan, AL-MALIK AL-ZÂHIR RUKN AL-DÎN, who reigned from 658-676 A.H. (1260-1277 A.D.). We have, therefore, the fact that the work was composed in the latter reign upon the basis of study carried out during the time of AL-MU'IZZ (1250-1257 A.D.). It thus seems probable that AL-'IRÂQÎ's life extended over the middle portion of the XIIIth. century A.D.

Scientifically, the present book does not offer the same interest as do those on alchemy, but scattered throughout it there are many facts which would be worth collecting. They are, however, considerably diluted with much trivial matter, of which I will give merely a single example (Page 43 of the lithographed edition): « — Another amusement : If you would like to amuse yourself at the expense of a dog, by making him leap and bound with delight, make a small cake of bread kneaded up with cinnamon and pepper. When the dog eats it he will go out of his mind on account of the excessive joy and excitement which he experiences ».

III. **Al-Kanz al-Afkhar** (« The Most Glorious Treasure ») — This book also is couched in the form of a parable; the author states that he has modelled it upon sayings of MUḤIYU AL-DÎN IBN AL-'ARABÎ (1165-1240). JÂBIR IBN ḤAYYÂN, PLATO and DHÛ AL-NÛN are mentioned in it, but its principal merit lies in the lists of chemical apparatus and *Decknamen* given at the end. These may be compared with the similar lists published by WIEDEMANN and RUSKA (*ante*, p. 405).

« **Chapter on the Seven Metals and upon their Names, Signs and Natures.** — Know that Lead (*usrub*) is cold and dry,

(39) DE SLANE's edition, III, 380.

(40) M., page 3.

particularity related to the spiritual nature of Zuḥal (Saturn), Lord of the Seventh Heaven. Its signs are ☄ and ☿ and its names: i. 'al-abār' (the metal extracted from collyrium). — ii. 'al-arḍ', the earth. — iii. 'al-jasad', the body. — iv. 'al-kuḥl', collyrium (sulphides of lead and antimony). — v. 'raṣāṣ al-kuḥl', lead from collyrium. — vi. 'al-razīn, the heavy'. — vii. 'al-ja' i', the hungry. — viii. 'al-māsik', the grasping. — ix. 'al-faḥm al-aswad', the black charcoal. — x. 'qalī al-ajsād', the alkali of the metals. — xi. — 'mudhīb al-ajsād', the melter of the metals. — xii. 'al-qadar', destiny. — xiii. 'al-rūḥ al-jamid', the solidified spirit. — xiv. al-ḥajar al-ḥālik', the intensely black stone. — xv. 'al-kibrīt al-aswad', the black sulphur. — xvi. 'wazīr al-shams', the vizier of the sun. — xvii. 'al-ḥajar al-mulayyin', the stone which softens. — xviii. 'al-naḥs al-a'zam', the greater calamity (Saturn, just as 'al-naḥs al-aṣghar', the lesser calamity, is Mars). — xix. 'Ḥakīm al-Hind', the wise man of India. — xx. 'al-shaikh al-aswad', the black shaikh. — xxi. 'al-ṣanam', the idol. — xxii. 'al-akhras, the dumb (as opposed to tin, « the shrieker »). — xxiii. 'al-mir'at al-sauda', the black mirror. — xxiv. 'Ifrush (copyist's error for 'Iqrūnus', Κρόνος), Saturn.

« As for tin (qaṣḍīr), this is hot and moist, sympathetically related to the spirituality of 'Mushtarī' (Jupiter) Lord of the Sixth Heaven. Its sign is ♄ and its names: i. 'qal'ī' (tin, cf. modern Turkish 'qalai'). — ii. 'ṣarrār', the shrieker. — iii. 'khawār', the weak. — iv. 'kibrīt abyad', white sulphur. — v. 'kaukab', star. — vi. 'Zuhra baiḍā', white copper. — vii. 'qāḍī', judge. — viii. 'ṣābūn', soap. — ix. 'al-nasr al-tā'ir', the flying eagle. — x. 'al-ḍāḥik', the laughter. — xi. 'dimāgh al-nuḥās', the brain of copper. — xii. 'al-najm', the star. — xiii. 'muhlik al-ajsād', the destroyer of the metals. — xiv. 'al-akh', the brother. — xv. 'al-anuk', (Persian word for tin; cf. the Assyrian 'anaku', lead). — xvi. 'al-muntin', the stinker. — xvii. 'al-aṣfar', the yellow. — xviii. 'al-dhakar', the male. — xix. 'al-sha'r al-a'zam' (probably an error for 'al-sa'd al-a'zam', the greatest good fortune, i.e., Jupiter, cf. WIEDEMANN and RUSKA, *op. cit.*, page 26). — xx. 'qāḍī fāris', Persian judge. — xxi. 'al-shabb', the youth. — xxii. 'Za'ūsh', Zeus, (Ζεύς).

« As for iron, this is hot and dry, sympathetically related to the spirituality of Mars, Lord of the Fifth Heaven. Its sign is ♂ and its names: i. 'al-shadīd' the strong. — ii. 'al-muqātil', the slayer. — iii. 'al-maut', the death. — iv. 'al-isqām (probably an error for 'al-isṭām', Greek στόμωμα. Cf. W. and R., *op. cit.*, p. 23. Accor-

ding to Dozy, 'al-istām' is synonymous with 'shābūrqān', Persian word for steel.). — v. 'al-tasāyarqān (error for 'shābūrqān', see no. iv above). — vi. 'al-ashqar', the ruddy. — vii. 'al-muhlik', the destroyer. — viii. 'al-nāfi', the useful. — ix. 'al-muhān', the despised. — x. 'al-Hindi', the Indian. — xi. 'al-qirmiziyyu', the crimson. — xii. 'al-'abd al-aswad', the black slave. — xiii. 'al-ḥaqīr', the despised. — xiv. 'al-ašamm', the dumb. — xv. 'arḍ fāris', Persian earth. — xvi. 'al-kibrīt al-aḥmar', the red sulphur. — xvii. 'al-nāṭiq', the articulate. — xviii. 'al-waqqāl' (probably an error for 'al-waqqād', the keen or penetrating. See also W. and R., *op. cit.*, page 23, where the reading is « 'al-wakkāl', vielleicht statt 'al-wakīl', der Aufseher ». 'Al-wakkāl' is given also in MS. British Museum Add. 25724, fol. 15 verso, but I think that 'al-waqqād' is undoubtedly correct). — xix. 'al-sarāb', the mirage (but W. and R., p. 23, read 'al-sharāb', the drink, a reading which is given also by the B.M. MS., *loc. cit.*). — xx. 'al-ḥazzā' al-makhdūm', the chief astrologer (doubtful). — xxi. 'Arsiyūs', Ares [Ἄρης].

« As for gold, this is moderately hot, and sympathetically related to the spirituality of the Sun, Lord of the Fourth Heaven, Its sign is ♄ and its names are : I. 'al-ab', the father. — II. 'al-'iqyān', gold (On these two names, cf. WIEDEMANN and RUSKA, *op. cit.*, p. 20. They read « 'al-ab al-buqyān', » and say, « Es handelt sich offenbar um zwei zusammengefloßene Decknamen 'aba' — der Vater, und 'buqjana' — die Prüfung, Probe. Dies geht aus der Parallelbezeichnung 'al-umm', die Mutter, beim Silber hervor ». Buqyan, however, is apparently an error for 'iqyān' under which LANE, Book I, Part V, p. 2118, gives: « — 'Iqyān, Gold, or pure gold, or gold that grows, meaning native gold, not such as is produced from the stones, or not such as is educed, by melting, from the stones; the 'alif' and the 'nūn' are augmentative ». 'Iqyān' therefore may be translated as virgin gold.) — III. 'al-'asjad', gold (old Arabic name). — IV. 'al-tibr', virgin gold. — V. 'al-sā' (almost certainly an error for 'al-shu'a', the sunbeam, cf. W. and R., *op. cit.*, p. 20). — VI. 'al-nūr', the light. — VII. 'al-šamghat al-sharīfa', the noble gum. — VIII. 'al-kibrīt al-qā'im', the durable sulphur. — IX. 'al-ibriz', name for gold (ὀβριζον). — X. 'al-šābir', the durable. — XI. 'al-kāmil', the perfect. — XII. 'dhukā nūras', the sun — ? — XIII. 'abu'l-daraj' father of steps or degrees. — XIV. 'ḥajar al-shams', the stone of the sun. — XV. 'al-bahaj', the delighter. XVI. 'al-muḍī', the brilliant. — XVII. 'al-sirr al-a'zam', the greatest secret. — XVIII. 'al-ḥajar al-mukar-

ram', the noble stone. — XIX. 'al-ṣābigh', the dyer or colourer. — XX. 'al-nahārī', the (metal) of the daylight. — XXI. 'kaukab al-ṣubḥ', the morning star. — XXII. 'Iliyūs', Helios (Ἡλιος).

« As for copper, this is hot and moist, sympathetically related to the spirituality of Venus, Mistress of the Third Heaven. Its sign is ♀ and its names are : I. 'al-ukht', the sister. — II. 'al-hawā', the air, air. — III. 'al-akhḍar', the green. — IV. 'al-kadr', the impure. — V. 'al-samm', the poison. — VI. 'al-dam al-jāmid', the congealed blood. — VII. 'al-aṭsha', the thirsty. — VIII. 'al-sirāya', the castle (possibly an error for 'al-sharāba', the drink. (Cf. W. and R., *op. cit.*, p. 25.) — IX. 'al-karīm', the noble. — X. 'abu' l-alwān', the father of colours. — XI. 'al-ṣamghat al-ḥumra', the red gum. — XII. 'al-misannu', the whetstone (or perhaps 'al-musinnu', the full-grown, or, perhaps again, an error for 'al-manas'. W. and R., *Fröhlichkeit*.) — XIII. 'al-mutī', the obedient. — XIV. 'al-untha', the female. — XV. 'al-arūs', the bride. — XVI. 'ghirā al-dhahab', the glue of gold. (Cf. W. and R., *op. cit.*, p. 25, 'urj al ḍahab', *Nacktheit des Goldes*.) — XVII. 'ṭawūs al-thurayya', the peacock of the Pleiades (possibly an error for 'ṭawūs al-barbā', peacock of the Egyptian temple. Cf. W. and R., *op. cit.*, p. 25.) — XVIII. 'al-anqa', the phoenix. — XIX. 'al-zauja', the wife. — XX. 'malika al-nisā', the queen of women. — XXI. 'al-asad al-akhḍar', the green lion. — XXII. 'Afrūdītī', Aphrodite (Ἀφροδίτη).

« As for mercury, this is cold and moist, sympathetically related to the spirituality of 'Ut^arid' (the planet Mercury), the Lord of the Second Heaven. Its sign is ♂ and its names are : I. 'al-mā' al-razīn', the heavy water. — II. 'al-mā' al-ilahiyyu', the divine water. — III. 'al-mā' al-khālīd', the perdurable water. — IV. 'al-farrār', the fugitive. — V. 'al-ābiq', the fugitive (volatile). — VI. 'al-tinnīn', the dragon. — VII. 'al-ghamām', the cloud. — VIII. 'al-thaqīl', the heavy. — IX. 'al-rūḥ al-ratb', the moist spirit. — X. 'al-jasad al-sā'il', the liquid metal. — XI. 'mā' al-hayā', the water of life. — XII. 'nuṭfat al-ma'dan', the sperm of the mineral kingdom. — XIII. 'al-ṭair al-abyaḍ', the white bird. — XIV. 'al-baḥr', the sea. — XV. 'al-dhahab al-dhā'ib', the liquid gold. — XVI. 'al-jasad al-maḥlūl', the dissolved metal. — XVII. 'al-lā'ib', the joker (or perhaps, the dribbler). — XVIII. 'al-sarī al-ḥaraka', the swift of movement. — XIX. 'rūḥ al-ajyāl', the spirit of the nations (probably an error for 'rūḥ al-ajsād', the spirit of the metals). — XX. 'abu al-ma'adin', the father of minerals. — XXI. 'abu al-anān', the father of clouds.

xxii. 'al-mumtazij', the amalgamater. — xxiii. 'al-abyaḍ', the white. — xxiv. 'al-karīm', the noble. — xxv. 'al-lū' lū' al-ratb', the moist pearl. — xxvi. 'al-hawā' al-mutajassad', the metallicised air. — xxvii. *Harmis*, *Hermes* (Ἑρμῆς).

« As for silver, it is cold and moist, sympathetically related to the spirituality of the Moon, mistress of the first Heaven. Its sign is ♄, and its names are : i. 'al-umm', the mother. — ii. 'al-waraq', coined silver (an old Pehlevi word). — iii. 'al-lujain' (word for silver). — iv. 'al-ṣamgha al-baiḍā', the white gum. — v. 'al-naḍār', virgin silver. — vi. 'al-asad al-ahlī', the tame lion. — vii. 'al-ṣakhra al-baiḍā', the white rock. — viii. 'al-mā' al-jāmid', the congealed water. — ix. 'al-'urjūn', the palm-branch. — x. 'abu al-manāzīl', the father of the mansions of the moon. — xi. 'dhū al-qarnain', the two-horned. — xii. 'al-ḥajar al-nārī', the fiery stone. — xiii. 'al-ṭalq al-abyaḍ', the white talc. — xiv. 'al-qīr al-lailī', the pitch (tar) of the night. — xv. 'al-ḍābiṭ', the tenacious. — xvi. 'al-jasam', the bulky (or, perhaps, 'al-jism', the body). — xvii. 'al-shaḥm', the fat. — xviii. 'al-muqayyid al-abyaḍ', the white shackler. — xix. 'al-mā' al-thabit', the solidified water. — xx. 'al-ladma al-yaṣīra', the gentle striker (the easily malleable). — xxi. 'al-arḍ al-ṭāhira', the pure earth. — xxii. 'al-'abd al-ṣālīḥ', the honest slave. — xxiii. 'al-maujūd al-munaffikh', the puffing body (an interesting reference to the property known as the spitting of silver; hot silver occludes oxygen, which it gives up on cooling. Cf. J. R. PARTINGTON, *Text-book of Inorganic Chemistry*, London, 1925, page 823; « Fused silver dissolves oxygen, which is liberated as soon as the metal begins to solidify. The solid crust is violently disturbed, and the metal spits »). — xxiv. 'Būras'. (? a scribe's error for *Silīnī*, *Selene*, the Moon).

« And as for the names of the Most Noble Stone (*i. e.*, the Elixir), the irreplaceable, the object of the search of the Sages and the Philosophers, without which their operation cannot be brought to completion (and it is as you see) [here follow three lines of hieroglyphics]. And as for its names (they are) : i. 'al-kalb', the dog. — ii. 'al-'uqāb', the eagle. — iii. 'al-kāfūr', the camphor. — iv. 'al-asad al-bariyyu', the harmless lion. — v. 'al-mā' al-ṭayyār', the flying water. — vi. 'al-rakhīṣ', the tender. — vii. 'al-tiryāq', the remedy (Greek Θηριακή). — viii. 'al-kibrīt al-abyaḍ', the white sulphur. — ix. 'samm al-ajsād', the poison of the metals. — x. 'al-nasr al-ṭā'ir', the flying vulture. — xi. 'al-gharīb', the stranger. — xii. 'al-samm al-nārī', the fiery poison. — xiii. 'al-nūr', the light. — xiv. 'zaibaq

al-sharqī', the mercury of the East. — xv. 'ibn al-nār', the son of the fire. — xvi. 'al-mā' al-jāmid', the congealed water. — xvii. 'al-ajjāj', the ardent. — xviii. 'lu'āb al-asad', the venom of the lion. — xix. 'bawl al-kalb', the dog's urine. — xx. 'bawl al-fil', the urine of the elephant. — xxi. 'mā' al-ghamām', the water of the clouds. — xxii. 'shams al-ḥukamā', the sun of the philosophers. xxiii. 'ṣābūn al-ḥukamā', the soap of the philosophers. — xxiv. 'al-shaiṭān', Satan. So understand these secrets, O brother.

« And as for the names of sulphur, the most characteristic of them are : i. 'al-kaifiyyu, the qualitative. — ii. 'al-wāqid', the combustible. — iii. 'al-'aqrab', the scorpion. — iv. 'al-ḥarq', the kindler.

« And as for the names of arsenic (sulphide, 'zarnīkh'), the most characteristic of them are : i. 'al-jabal al-aṣfar', the yellow mountain. — ii. 'al-'alam al-sharqī', the Eastern sign.

« And as for 'rasakht' (copper oxide), some of its chief names are : i. 'rusakhtaj' (Persian word for this substance, which is oxidised copper). — ii. 'harashqalā', chrysocolla (χρυσόκολλα). — iii. 'tinnīn', dragon. — iv. 'ḥarqūṣ' (this word is usually written 'ḥalqūṣ'), chalcos, χαλκός, calcined copper.

« And as for the vitriols, some of their chief names are : i. 'shahīra', a kind of vitriol. (Cf. WIEDEMANN, *Zur Chemie bei den Arabern*, Erlangen, 1911, p. 97). — ii. 'qalqant' (χαλκανθός). — iii. 'qalqatar' (colcothar). — iv. 'maṭlūs (unidentified).

« To mention the stones entering into (the composition of) the Elixir of whiteness and (that of) redness and (that of) blackness, they are as follows : i. 'marqashithā dhahabī' (golden marcasite), its name in Greek is 'ḥarbātis'. — ii. 'marqashithā fuḍḍiyya' (silver marcasite), its name in Greek is 'burnātis' (error for 'burītis', πυρίτης). — iii. 'sīlaqūn', its name in Greek is 'zarnūq' (ἀρσενικόν). — iv. 'martak' (litharge, PbO), its name in Greek (!) is 'murdasanj'. — v. 'dahnaj' (malachite or other green copper compound), its name in Greek (!) is 'dahnak'. — vi. 'al-ṭalq', its name in Greek is 'afrāsālinūn (CaSO₄) Ἀφροσέληνον. — vii. 'al-shādhana' (haematite, Fe₂O₃), its name in Greek is 'ḥalīnūs' (?) — viii. 'raṣaṣat zarnīkh' (the lead from arsenic sulphide), its name in Greek is 'arsāliqun' (error for 'arsāniqūn', ἀρσενικόν). — ix. 'tutiā (zinc oxide, pompholyx), its name is 'ṣlḥḥṣ' (vocalisation uncertain). — x. 'zarnīkh maṣā' (masa, μάζα) (41), its name in Greek is 'rahaj' (word for arsenic,

(41) On this word, cf. LIPPMANN, *Die Entstehung und Ausbreitung der Alchemie*, in several passages.

according to Dozy, *sub voce*). — xi. 'kibrīt muṭahhar' (purified sulphur), its name in Greek is 'isqūnās' (?). — xii. 'milḥ qalī' (salt of ashes, potash), its name in Greek is 'tūrbīs' (?).

« A list of the remaining names upon which agreement is found in the books of the ancients : i. 'milḥ baul' (salt of urine), its name in Greek is 'mughlīs' (?). — ii. 'natrūn' (native sodium sesquicarbonate, etc.), its name in Greek is 'bādīs' (?). — iii. 'zaibāq musā'ad' (sublimed mercury, corrosive sublimate, HgCl_2), its name in Greek is rat poison. — iv. 'zanjafar thābit' (fixed cinnabar), its name in Greek is 'qinnabāris' (cinnabar, κιννάβαρις). — v. 'al-shādāna al-maḥlūl' (dissolved haematite), its name in Greek is oil of salt. — vi. 'al-shīraj al-ṭariyyu' (fresh oil of sesame), its name in Greek is oil of vinegar. — vii. 'al-zait al-thābit' (fixed olive oil), its name in Greek is « the three times (great, distilled?) » oil. — viii. 'al-zaibāq al-maḥlūl' (dissolved mercury), its name in Greek is the fortune of the sword (māl saif). — ix. 'al-martak' (litharge), its name is the milk of the virgin (lac virginis). — x. 'al-qalī al-mukallis' (calcined potash), its name in Greek is coagulated water. — xi. 'al-qalī al-maḥlūl' (dissolved potash), its name in Greek is dog's urine. — xii. 'mā' al-jīr wa al-qalī' (solution of lime and potash), its name in Greek is the water of the head ('mā' al-ra's'). — xiii. 'mā' al-rāsakht wa al-nushādir' (solution of copper oxide and ammonium chloride), its name in Greek is the water of the wolf (mā' al-silq). — xiv. 'al-milḥ' (salt), its name in Greek is 'athābishu' (?). — xv. 'al-kils' (quicklime), its name in Greek is « the more easily loosened » (*i. e.*, the powdery, no doubt in reference to the fact that when lumps of quicklime are moistened they fall to a powder). — xvi. 'al-maghniṣiā' (magnetite, pyrolusite, etc.) in Greek is 'nabaṣṭarīs' (alabaster, Ἀλάβαστρος). — xvii. 'raṣāṣ al-kuḥl' (the lead from collyrium), its name is 'ismit' ('ithmid', στίμμι, antimony). — xviii. 'isfīdāj' (white lead, basic lead carbonate), its name is 'faluzabalis' (aphroselinon? The usual Greek name for this substance is ψιμύθειον). — xix. 'al-safiyādaj' (probably a modification of, or an error for, the preceding), its name in Greek is 'andarāmūs' (Ἀνδορᾶμας). — xx. 'al-kibrīt' (sulphur) is 'rauṣ' in Greek. — xxi. 'khubth al-ḥadīd' (scories of iron, smithy scales, Fe_3O_4), its name in Greek is 'atsiyurās' (σκιώτια?) — xxii. 'tūbāl nuḥās' (scales of copper) in Greek is 'harfaṭīs'.

« This is a list of the agreed names for apparatus [sketches are given]: i. The name of the sieve is the *refiner of substances* ('al-ajsād'). — ii. The name of the iron aludel is the *raiser (grower) of spirits*. —

III. As for the name of the 'amyā' (blind retort), it is the *womb*, and also the *vase for digestion* (putrefaction, 'ta'fīn'). — IV. The name of the 'bašira' (*lit.*, comprehension, proof; as a name for a vessel or other piece of apparatus it is not recognised by the dictionaries), is the *elephant's belly*. — V. The name of that (vessel) which is buried in the cellar is the *horse's belly*. — VI. The name of that which is heated by a pot (of water) is *bain-marie* (ḥammām Maryā). — VII. The name of the flat stone (mortar) is the *assembler of particles*. — VIII. And as for the name of the vessels for ceration, it is the *fixer of spirits*. — IX. As for the name of the balance, it is the *prover of equilibrium*. — X. The name of the fire of (*i. e.*, blown by) the bellows is the *Judge of Truth*. — XI. The name of the properly adjusted fire is the *Natural Fire*. — XII. The name of the small fire is (that which sublimes salammoniac — represented by an eagle arising from a flat basin). End of the Book of the Most Glorious Treasure ».

Mediaeval Latin versions of passages which occur in the Muktasab.

In the course of the *Muktasab*, AL-'IRĀQĪ gives several passages which purport to be quotations from ancient alchemical authors. They are all couched in the obscure language characteristic of the Alexandrian School, and may be paralleled in the *Collection des anciens alchimistes grecs*, published by BERTHELOT. They can scarcely be said to have any intrinsic value for the history of chemistry, but they are of definite use as clues to the origin and transmission of particular ideas, and I have therefore thought it well to draw attention to the fact that many of these quotations are to be found in Latin in the wellknown book *De Compositione Alchimiae*, attributed, as a translation from the Arabic, to ROBERTUS CASTRENSIS. On the general authenticity of this book, and on the question whether ROBERT OF CHESTER actually translated it, reference may be made to Professor JULIUS RUSKA's scholarly treatment of the problem in his *Arabische Alchemisten*, I (42). The discovery of the Arabic text of several passages of the book in the *Muktasab* does not, of course, prove that they were translated from that language, since the date of the *Muktasab* is about a century later than that of the supposed translation by ROBERT OF CHESTER. I think, however, that it is only reasonable to

(42) Heidelberg, 1924. (*Isis*, VII, 183.)

infer that the passages in the Latin work and those in the *Muktasab* had a common origin in earlier Arabic treatises on alchemy.

As both the Latin and Arabic texts of the quotations are in print and are easily accessible to anyone who wishes to consult them, I give here merely the necessary references. The Latin text is to be found in MANGET'S *Bibliotheca Chemica Curiosa*, vol. I, pp. 509 sqq., while the corresponding Arabic may be consulted in my edition of the *Muktasab* (see footnote 1).

- I. Latin, p. 513, column 2, lines 45-54 . . . Arabic, M, p. 34.
- II. Latin, p. 514, column 1, lines 1 - 11 . . . Arabic, M, p. 34.
- III. Latin, p. 514, column 1, lines 21-49 Arabic, M, 34 and p. 35.
- IV. Latin, p. 514, column 1, line 59, to col. 2, line 18. Arabic, M, 35.
- V. Latin, p. 516, column 1, lines 51 to 53 . . . Arabic, M, p. 46.
- VI. Latin, p. 516, column 2, lines 35 to 37 . . . Arabic, M, p. 40.
- VII. Latin, p. 516, column 2, lines 48 to 50 . . . Arabic, M, p. 51.
- VIII. Latin, p. 516, column 2, lines 51 to 71 . . . Arabic, M, p. 53.

The fact that much of this matter agrees word for word, as far as the literal translation of Arabic into Latin is possible, is very significant, and my general impression is that if the *De compositione alchymiae* is not a direct translation from the Arabic it is undoubtedly a compilation by one who was closely acquainted with Muslim chemistry.

I may, perhaps, appropriately discuss shortly the mysterious word *Ethees* which is occasionally used as a secret name for gold, as in the *De compositione alchymiae*. So far as I am aware, no explanation of this term has hitherto met with general acceptance. RUSKA (*op. cit.*, p. 36) has tentatively suggested that it might possibly be a corruption of the Arabic 'ibrîz' (Greek ὀβριζον), but admits that it is difficult to see how such a change could have taken place. I venture to suggest that the enigma of *Ethees* is susceptible of a very simple solution, and that this word is, in fact, nothing more than an abbreviated transcription of the Greek ἐτήσιος. That, according to the alchemists, the growth or preparation of gold required exactly a year is common knowledge, and has been mentioned by many historians (*e. g.*, E. O. VON LIPPMANN, *Die Entstehung und Ausbreitung der Alchemie*, pp. 305, 306, 341, 343, 345, 500, etc.). A typical statement on the matter is that of the author of the 'Rutbatu'l-Hakîm' (43), who says, « We have seen that the natural philosophers mention that gold

(43) The pseudo-MASLAMA AL-MAJRÎTÎ.

is formed in its mine in the exact space in which the sun traverses its heaven, and this is the space (of time) which men call a year ».

I take it, then, that the name *Ethees* refers to this supposititious time of gestation of gold, and that when it is given to the metal it is merely in order to apply an enigmatical reference to the alchemical tenet.

E. J. HOLMYARD.

Clifton College, Bristol, January 4, 1926.

Note added on March 18, 1926. — As I was correcting the proofs of this article I received a consignment of manuscripts from Cairo, in one of which a passage occurs serving to confirm beyond doubt the suggested origin of the word *Ethees*. The manuscript in question is entitled *The Eighth Letter of Zozimus, on the « Keys of the Art »* by DEMOCRITUS. In reply to the question, « Why did the philosophers call the compound 'Atisûs' (clearly ἐτήσιος)? the following answer is given: — « Because 'Atisûs' is, so they maintain, that which is born every year... they therefore called their compound the 'Atisûs Stone'. 'Atisûs' is as close a transcription of the Greek ἐτήσιος as could be expected; in older MSS. no doubt the word was written 'Atisiyûs', the *yâ* after the second *sin* having been omitted by a careless scribe. In any case, there can be now no uncertainty as to the meaning of *Ethees*.

E. J. H.

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EDITED BY

GEORGE SARTON, D. Sc.

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