

(+ B From the Book of Aurelian Patriarch of Rome called
The Fulfilment of the Canons, 1

From the Book of Origin called *Of Easter*, 1

Isidor of Pelusium, From the 1,000 Letters, 1)

(Gregory) the Theologian, 1

Basil, 3 (B 2)

Chrysostom, Commentary on Isaiah, 1 (B Epiphanius, 2)

Cyril of Jerusalem, 1

Epiphanius of Cyprus, 2 (B Chrysostom, 1)

f. 49b. David the Philosopher, 1

J ends here (p. 97)

From the Council of Dvin, 1

(+ B Stephen of Siunik', 2)

Nerses the last Catholicos of Armenia, 1

f. 50a. Dialogue between the Patriarch and Komitas

From the Letter on the Faith of Xosrov Catholicos of Armenia,
1

From the Letter of George Catholicos of Armenia to John the
Patriarch of the Syrians, 1

f. 50b. From the Letter on the Faith of Nerses the last Catholicos of
Armenia to the Emperor Manuel, 1

(+ B George Catholicos to John Patriarch of the Syrians, 1

Severus, 1

Basil, 2

Origen, 1

Dionysius of Alexandria, 1

Cyril of Alexandria, 1

Chrysostom, 2

Aristides, 1)

Testimonies of the Second Council of Nicaea against those who despise
the *ἀγάπη* (?) which is the *Matał* (B On the Easter *Matał* from the
Apostolic Canons), 2

From (the Canons of the Council) of Gangra, 1

Basil, Canons, 4

Sahak Part'ew, 1

(+ B Question of Ašot on *Matał*)

On the Blessing of Salt.

A ends f. 50b. B ends f. 91b. P ends f. 102b. V ends f. 83a.

Harvard University.

R. W. THOMSON.

THE TESTAMENT OF JACOB

In Manuscript 939 of the Library of the Armenian Convent of St. James in Jerusalem is found a text of the *Testament of the XII Patriarchs*¹. The manuscript is a Miscellany, written in the year 1621 in Moush, and has been fully described in the *Catalogue of the Manuscripts of St. James*². What is of especial interest is that, preceding the text of T. Patr. in this manuscript, there occurs a composition entitled: *Ktakk' Yakobay nahapetin. Yoržam handerjeal ēr Yakob nahapetn vaxčanił yEgiptos*, « The Testament of the Patriarch Jacob, at the time when the Patriarch Jacob was about to die in Egypt ».

It opens with three introductory words, *ēj Yakob yEgiptos* « Jacob went down into Egypt », and these are followed immediately by the text of Gen. 47 : 27-50 : 26. The work covers pp. 141-148 of the manuscript and, as has been stated, immediately precedes T. Patr. which opens with T. Reuben.

This phenomenon, the placing of a *Testament of Jacob* before the *Testaments of the XII Patriarchs*, is quite unusual and is worthy of our further attention. When the manuscripts of the Armenian version of the T. Patr. are examined, it becomes evident that this text is not found in them. These manuscripts fall into two main types, at least insofar as their text has been studied³, and T. Patr. in Jerusalem 939 is closest to that grouping, already discerned by R. H. Charles, which includes MSS ABHK, *i.e.* Venice Mechitarist 345,

¹ See the author's forthcoming book, *The Testament of Levi, A First Study of the Armenian MSS of the Testaments of the XII Patriarchs in the Convent of St. James, Jerusalem*, where the text of T. Patr. in this MS is printed.

² Bishop Norayr BOGHARIAN, *Grand Catalogue of St. James Manuscripts* (Jerusalem : 1968), III, 486-493 (in Armenian).

³ This statement is based on those manuscripts whose text the writer has been able to examine. Dr. Ch. Burchard, in the study referred to below, has attempted a further and more complex analysis of text types, and his detailed results should be taken into account once his study appears. Nonetheless it appears that his new groupings cannot affect the basic, recensional group ABHK + Jerusalem 939, to which perhaps should be added, according to Burchard, Vienna Mechitarist 705 and Erevan, Matenadaran 354. On this, see below.

Venice Mechitarist 679, Bodleian e 30 and Vienna Mechitarist 126. The full descriptions of these manuscripts in the catalogues of the respective libraries offer no hint of a text such as the *Testament of Jacob* ⁴.

The writer has had the advantage in this work of having at his disposal the manuscript copy of an article dealing with the Armenian manuscripts of T. Patr., written by Dr. Ch. Burchard, and generously made available to him by the author. In this work, Dr. Burchard has made an extensive study of the extant MSS of the Armenian version of T. Patr. and of their groupings. Charles had already divided the group ABHK into two sub-classes, AHK and B. To the type of AHK Burchard would perhaps also attribute Erevan, Matenadaran 354. Under the type of B he includes Vienna Mechitarist 705. On the basis of the text of T. Patr., it is beyond doubt that Jerusalem 939 is closer to AHK than to B. It is likewise notable that Erevan, Matenadaran 354, if indeed it belongs to this type, is unique among the manuscripts showing this textual form inasmuch as it is a Bible. Further, Dr. Burchard has dealt in some detail with the books adjoining T. Patr. in the material he studied, and in no case does he note the presence of any work such as the *Testament of Jacob* ⁵.

A search in the major catalogues of Armenian manuscripts also failed to uncover a further reference to a text of the same type as the

⁴ R.H. CHARLES, *The Greek Versions of the Testament of the Twelve Patriarchs* (Oxford: 1908), xivf. For the Venice manuscripts see B. SARGHISSIAN, *Grande Catalogue des manuscrits arméniens de la Bibliothèque des P.P. Mekhitaristes de Saint-Lazare* (Venice: 1914-24), 1129-1138 for MS 346. Venice 679 has not yet been included in the Venice catalogue. Some details about it may be found in S. HOVSOPYANTZ, *Ankanon girk' Hin Ktakaranac'* (Venice: 1896), pp. x-xi, B. SARGHISSIAN, *Usumnasirut 'iwnk' Hin Ktakarani Anvaver Groc' vray* (Venice: 1898), p. 67, and in J. ISSAVERDENS, *The Uncanonical Writings of the Old Testament found in the Armenian MSS of the Library of St. Lazarus*, (2 ed., Venice: 1934), p. 268. The manuscript of the Bodleian Library is described in S. BARONIAN and F.C. CONYBEARE, *Catalogue of the Armenian Manuscripts in the Bodleian Library* (Oxford: 1918), 113-115 and that in Vienna by J. DASHIAN, *Catalog der armenischen Handschriften der Mechitaristen-bibliothek zu Wien* (Wien: 1895), 411-413.

⁵ Burchard, in his Table II, observed that in Erevan, Matenadaran 354 III *i.e.* IV (Ezra occurs before T. Patr. From the writer's film of III Ezra in that MS, kindly placed at his disposal by the authorities of the Matenadaran, it is apparent that III Ezra concludes on f. 252b. On f. 253a there follows, in column i, the preface to Esther in a second hand and, in column ii, the Book of Esther. It seems possible, therefore, that Dr. Burchard's information was incomplete at this point.

Testament of Jacob of Jerusalem 939, although it remains quite possible that such exists in manuscript somewhere. Certainly, as far as reported by Charles and in the much more extensive study by Burchard who paid especial attention to the works associated with or immediately adjoining the T. Patr. in the manuscripts, it appears that the conjunction of T. Jacob and T. Patr. in Jerusalem 939 is unique.

A reference to an apocryphal book of Jacob may be found in Ap. Const. VI: 16 which speaks of βιβλία ἀποκρύφα ... τῶν τριῶν πατριαρχῶν, and this might well refer to a *Testament of Jacob*, for Testaments of Abraham and Isaac are known to exist. Similar ideas have been sought in T. Zeb. IX: 5, cf. T. Benj. X: 4, but these passages are not completely convincing.

There are, however, a number of extant works, or reported works which bear the title *Testament of Jacob*. M. R. James observes that a text with this title is found in a Greek manuscript in Paris. In MS Coislin. 269, 12th cent., f. 5 the text is to be found and it is an extract from Gen. 49. Further, in association with the *Testaments of Abraham and Isaac*, there occurs a *Testament of Jacob*, and this is found in a number of oriental languages. Thus an Arabic version is to be found in the Bibliothèque Nationale, no. 132 of the Catalogue of Arabic Manuscripts. This is a manuscript of Egyptian provenance and dating from the year 1629. In this the *Testament of Jacob* follows the *Testaments of Isaac and Abraham*. It includes introductory materials, the text of Gen. 47: 29-49: 1, but not the Blessings of Jacob in Gen. 49. Then follow various other materials in which are embedded the texts of Gen. 50: 4 ff, Gen. 48: 3-4 and I Cor. 6: 9-10. M. R. James also refers to an Ethiopic copy of these same three Testaments in Bib. Nat. MS Eth. 134, as well as further Arabic manuscripts in the Vatican Library.⁶

A text which, as far as can be judged by comparing it with the summary of the Arabic published by James, is substantially identical with the Arabic and Ethiopic *Testament of Jacob* also occurs in Coptic. It is found in Vatican Coptic 61, ff. 163b-189b, a Boharic manuscript written in the year 962. Like the Arabic and Ethiopic,

⁶ See M.R. JAMES, *The Testament of Abraham* (Cambridge: 1912), 6, 131-161 for a summary of the Arabic *Testament of Jacob* and for further discussion. The Vatican Arabic manuscripts are referred to by James who quotes Mai, *Scriptt. Vett. Nov. Coll.*, IV, Cod. 171 and Assem, *Bibl. or.*, i, 986, ii, 285, see JAMES, *ibid.*, 157.

the Coptic gives the *Testament of Jacob* following the *Testaments of Abraham and Isaac*. The Coptic text was translated into English in 1927⁷, and it may evidently be assumed that it is likely to be earlier than any of the other materials referred to by James⁸.

Two further pieces of relevant information should be mentioned. In the Catalogue of the Manuscripts of the Matenadaran there is listed a work under the title *Yišatak nazaharc'n Abrahamu, Isahakay ew Yakobay*. Commemoration of the Patriarchs Abraham, Isaac and Jacob, «The contents of this work, which is found in MS no. 1665, a Miscellany of the year 1441, are not known to the writer, but it is possible that this is a hagiographic work of some type. It is of interest to observe that here Jacob is found in association with Abraham and Isaac, not with his twelve sons⁹.

Further, in Jerusalem, Armenian Patriarchate MS 1925, the Bible of Erznka, the T. Patr. is headed, rather exceptionally, by a marginal miniature (f. 253a). This miniature shows an old man, seated, holding an open scroll. Both Bp. N. Bogharian, the Librarian of Manuscripts, and Dr. B. Narkiss of the Department of Fine Arts at the Hebrew University have suggested to the writer that this figure probably represents Jacob and not any of the Twelve Patriarchs. If so, then this illumination may also give some oblique support to the existence of a *Testament of Jacob* in Armenian, which is now confirmed by MS 939.

It appears, therefore, that the existence of a *Testament of Jacob* is witnessed by a number of different sources in various languages. The situation in Jerusalem 939 is unique, as far as is known, in two respects. First, it seems to be the only occurrence of a text under this name in Armenian. Second, it is the only occurrence, in any language,

⁷ See S. GASLEE in G.H. BOX, *The Testament of Abraham* (London: 1927), 55-89. Reference is made there to the following works which were unavailable to the writer: the publication of the Coptic text by I. GUIDI in *Rendiconti della Reale Accademia die Lincei, Classe di Scienze, Morali, Storiche e Filologiche*, Series V, Vol. 9 (Rome: 1900), 157-180, 223-264 and a German translation by E. ANDERSSON in *Sphinx* VII (Uppsala: 1903), 77-92, 124-142.

⁸ M.R. JAMES, *The Lost Apocrypha of the Old Testament, Their Titles and Fragments* (London: 1920), 18-19 refers also to a printed work under this title which evidently circulated in the sixteenth century. He considers this most probably to have been a reworking of Gen. 49. There also exists a Jacob apocryphon called *The Ladder of Jacob* found in Slavonic in the *Palaea*, see JAMES, *ibid*, 96ff.

⁹ *Catalogue of the Armenian Manuscripts of the Matenadaran*, Pt. I, (Erevan: 1965), col. 604.

of a *Testament of Jacob* in association with the *Testaments of the XII Patriarchs*, and not either on its own or together with the *Testaments of Abraham and Isaac*. When the statement of Ap. Const. is brought into account, this may be seen as a further corroboration of the statement by James that the existence of various works under the title *Testament of Jacob* tends to confirm the idea that such a work once existed in Greek.

We should further bear in mind that not only the Armenian text, but also the Greek, and the Arabic-Coptic-Ethiopic works all are based on the last chapters of Genesis. Further, the Armenian and the Arabic-Coptic-Ethiopic works both commence their utilization of the Biblical text with the last verses of Gen. 47. It is at least possible, however, that the use of the last chapters of Genesis, with greater or lesser additions, as a *Testament of Jacob* does not reflect an early tradition. It may well be that this is a secondary phenomenon, resulting from the desire to provide for this patriarch a Testament, complementary to the Testaments of the various other Patriarchs which were in existence as independent compositions. This possibility is also supported by the fact that Jacob is the one Patriarch to whom the Bible itself assigns a Testament, and the separate circulation of this passage therefore would have been a very natural development.

Be this as it may, the existence of a *Testament of Jacob* in Armenian is of great interest. It adds another piece of evidence to the materials known in the other oriental languages and Greek which witness to a tradition of the existence of such a work.

THE TEXT

Since the Armenian text follows that of the last chapters of Genesis, there is no need to print it in full. Below, a list of its variants, as compared with the Bible of Zohrab is given. This may be of interest to those concerned with the development of the Biblical text in non-Biblical manuscripts in Armenian. In general, it may be observed that the text of Genesis presented by MS 939 is fundamentally identical with the Armenian version as published by Zohrab.

Further, the Armenian variants have been compared with the Septuagint as presented in A.E. Brooke and N. McLean, *The Old Testament in Greek*, Vol. 1, Pt. 1, «Genesis» (Cambridge: 1900).

Where the variants of MS 939 appear to correspond to variants of the Greek, this has been noted. It may be observed that the number of such variants is rather surprising. There is also a series of cases in which the VLL shown by Zohrab correspond to Greek variants, sometimes with and sometimes without MS 939. This serves to indicate that in these readings MS 939 is in accord with the pattern which can be observed elsewhere in the Armenian manuscript tradition.

The fact that a given Armenian MS or group of MSS may preserve on occasion the best reading of the Armenian tradition, or show a text in accord with the LXX against the witness of the other Armenian MSS or groups is, of course, in no way extraordinary. That differing Armenian manuscript readings may represent differing readings within the Greek is a most interesting and important phenomenon. The confirmation of this over a broad spectrum of manuscripts and with a considerable quantity of text is of importance, and bears on the basic view to be taken on the development of the Armenian Biblical text. Here, however, only the partial evidence which can be drawn from the collation of one MS over little more than three chapters of text is presented, and this incidentally to the main subject of the present paper. Thus, while the occurrence of such readings should be noted, it would be rash to draw far-reaching conclusions from it.

Certainly it should be observed, however, that MS 939 presents some readings not shown by Zohrab's manuscripts which correspond to the readings either of the majority or of a weighty group of Greek witnesses, thus, for example, 48 : 17, 50 : 9, 13, 16. Moreover, the apparently extensive role played by the Egyptian witnesses to to Septuagint in the variants should be observed, although it is by no means certain what the implications of this are. The situation highlighted by this text, therefore, serves to emphasize the need for extensive, new collations of Armenian O.T. manuscripts and for the re-evaluation of their readings.

Notes on the Collations

1. Common spelling variants are not noted.
2. The lemma, in the square bracket, is Zohrab's text and that which follows in the reading of MS 939.

3. Verse division follows Zohrab, none being indicated in the manuscript.

4. The notation = VL following the reading of MS 939 indicates that this variant is also recorded in Zohrab's apparatus.

5. Material in the notes following a colon (:) is of two types. It may be the present writer's comment on the Armenian variant or it may be the comparative Greek material. The witnesses to the Greek have been cited following, fundamentally, the system of Brooke and McLean, but with some expansion of the sigla to make them more readily comprehensible.

Gen. 47 :27

ժառանգեցին] ժառանգեցան

28 եզիպտացւոց] եզիպտացաց : ? ւո > ւ

եղեն] + ամենայն : + πασαι <25> Old Lat.

29 կոչեաց] om preceding և

30 բանի] բանիդ

Gen. 48 :

1 ազդ] աստ twice

եկն] + preceding եւ = VL

եղև³] + եղև : dittog.

4 ասէ] + ցիւ = VL : + μοι all Gr. except a Sahid.-cod Chrysos.

զքեղ²] om

5 յեզիպտոս¹—յեզիպտոս²] om : hmt.

իբրև] իբև

զուրբէնն] զուրբէն

եղիցին] եղիցի

7 երկրին] յերկրին : cf. Sahid.-cod *in terra Chabratia*

գալն] + ինձ

թաղեցի] թաղեցին = VL : α₂ καταρωξαν

8 քո] om : bdjkw Cyril Alex.-cod om

11 յերեսաց] երեսաց

կարօտ եղէ] կարաւտեալ է

աստուած] om : Sahid.-ed om

12 ծնգաց] ծնկաց

13 յաջմէ] ընդ աջմէ

14 եփրեմի] եփրեմա

- կրտսեր] կրտեր
 գձեռան] գձեռն
- 15 Ած.] following *իմ* eras : cf. a₂ Sahid.-ed which add *μου*
 աբրաամ] աբրաՀամու
 և] om
 իսաՀակ] իսաՀակա
- 16 *ի սոսա անուն իմ*] *անուն իմ ի սոսա* : word order = most Greek
 օրՀնեսցին] աւրՀնեսցեն
- 17 Հայրն] + *իւր* : + *αυτου* ADL achk-oqstuxy a₂ b₂ c₂ Bohar. Sahid.
 Old Lat. Cyprian
 Հօրն] Հաւր
 գլուխն] գլուխ
- 18 ցՀայրն] ցՀայր, corr from *զՀայր*
 Հայր] Հայն, ն dotted
 ձեռն] om = VL : om majority of Greek
 սորա] սորոյ
- 19 *ի*] om : ? haplog.
 եղբայրս] եղբայր
 կրտսեր] կրտեր : cf. v.14 *supra*
- 20 ձեզ] om
 ասացեն] ասիցեն; + preceding *և*
 զեփրեմ] զեփրեմն = VL : + *τον* c₂
- 22 ամուրՀացուցն] ամուրՀացոց

Gen. 49 :

- 1 *իւր*] om
 ձեզ¹] om : Philo om
- 3 յանդիմանութեամբ] յանդանութեամբ = VL : cf. Gk *αὐθάδης*, cf. v. 7 *infra*
- 4 եռասցիս] եռասցես
 զանկողինս] զանկողինն = VL
- 7 յանդուգն] յանդուքն
- 8 ձեռն] ձեռք = VL
 երկիր] + preceding *և* : + preceding *και* b₂ Chrysos. Cyril Alex.
 Dial. of Timothy and Aquila
- 9 ելեր²] om
 յարուցանէ] յարուցանիցէ = VL
- 10 պակասեցէ] պակասիցէ
 իշխան] իշխանի (*ի* dotted); + *ի* = VL
 եկեցէ] եկեսցեն = VL (Oskan)

- իւրն*] *իւր*
 Հեթանոսաց] Հեթանոսացն
- 11 զգնդակէն] զգնդակէն
 զյաւանակ²] զաւանակ
 Հանդերձա] Հանդերձ
- 12 զուարթագին] զուարթագինք
 աչք նորա] աչքն
 զկաթն] կաթն
- 13 յեզերս] յեզեր = VL
 ծովու] ծովուց = VL
 նաւաՀանդիսա] in Zohrab doubtless error for *նաւաՀանդիսա*
 նաւաց] նաւուց
- 15 պարարտ էր] պարարտ : cf. Greek *δτι πίων*
 յաշխատել] աշխատել
- 17 դարանակալ] դարանակեալ
- 18 Հինի] Հինիւ = VL
- 22 *իմ*] om : Bohar. om
 բանսարկուքն] բանսարկու
- 26 յովսեփու] յովսեփայ
 գլխոց] գլխոյ : sing in some Gk traditions
- 28 որդիք] ազգ, cf. VL *ազգք* : acm Old Lat. *φύλαι*
 ազգք] om = VL : om majority Gk
 երկոտասան] երկոտասանք = VL
 Հայրն] Հայր
- 29 թաղեցէք] թաղեսջիք
 յայրի] յայրին
 յազարակին] ազարակ
- 30 աբրաամ] + զայրն = VL : thus majority Greek *τὸ σπῆλαιον*
- 31 թաղեցին²—թաղեցին³] om : hmt., fa₂ om *ἔθαψαν²—ἔθαψαν³*
 ստացուածի] ստացուած
 այրին] յայրին
 է] om
- 32 զոտսն] զոտս
 անդէն] անդէն = VL
 նաՀիճսն] + *իւր* *և* = VL
- Gen. 50 :
- 1 յովսեփայ] յովսեփ = VL
 իւրոյ] իւրոց

- 2 զՀայրն] զՀայր
 3 դիապատիկքն] դիազարդքն
 լացին] լցան = VL : thus Greek
 զնա] նորա = VL : thus Greek
 և թանանունն] քառասուն և եւ թանասունս : cf. b₂ τεσσαράκοντα ἡμέρας
 5 երդմեցոյց] երդմեցոյց
 զՀայր] զՀայրն (-ն above l. pm)
 6 զՀայր] զՀայրն
 երդմեցոյց] երդմեցոյց
 7 զՀայր] զՀայրն
 8 զազգատոհմ] զազգատոհմն
 9 էլին] + preceding և = VL : thus majority Greek
 11 սսեն] om
 13 զնա²] om : m om
 յերկրին] յերկրն = VL : thus majority Greek
 թաղեցին²] + զնա : thus majority Greek
 կրկնում] ի կրկնումն
 14 և³] om
 թաղել] ի թաղել
 15 յովսեփայ] յովսեփու
 թէ] եթէ
 նմա] նա = VL
 16 ցնա] om : not in Greek, presence in Zohrab-text not noted in
 Brooke-McLean
 17 չարիս] չար ինչ
 20 որպէս] + և = VL
 յաւորս] յաւոր
 22 եկեաց] եկաց : inner-Armenian
 Հարիւր] + և
 մինչեւ] մինչ
 23 եղբարս] եղբարսն
 սստուած տալ] տալ սստուած
 24 տապանի] տապան
 յեզիպոս] om

Hebrew Universty
 Jerusalem.

Michael STONE.

LES AREWORDI (FILS DU SOLEIL) EN ARMÉNIE
 ET MÉSOPOTAMIE ET L'ÉPÎTRE DU CATHOLICOS
 NERSÈS LE GRACIEUX

Parmi les nombreux mouvements hérétiques du Moyen Âge arménien, celui des Arewordi, « Fils du Soleil », occupe une place bien déterminée. Ce mouvement a eu une large expansion en Arménie et en Mésopotamie, principalement aux XI^e-XII^e siècles, bien que l'on trouve mention de ces hérétiques et de certaines de leurs communautés à une époque beaucoup plus tardive.

Nous avons très peu de renseignements sur le mouvement des Arewordi et c'est une des raisons pour lesquelles il a été insuffisamment étudié. Une autre cause est le peu d'intérêt des historiens pour ce mouvement du fait que, dans la mesure où on peut le savoir par les sources, il n'a pas eu une amplitude et une envergure pareilles à celles qu'ont eues les mouvements des Pauliciens et des Thondrakites par exemple, et n'a pas abouti à une lutte de classe ouverte contre les exploiters féodaux. A l'époque où nous le connaissons, il a été une secte hérétique. Cependant, cette circonstance ne nous donne pas le droit d'ignorer le mouvement des « Fils du Soleil », car, pour comprendre plus pleinement la lutte sociale et la lutte des idées au Moyen Âge arménien, et non seulement arménien, il est nécessaire d'étudier tous les mouvements et toutes les idées d'opposition.

Outre des mentions isolées dans des manuels et dans des monographies où sont étudiées l'histoire du peuple arménien et de l'Église arménienne ou même l'histoire des hérésies arméniennes, nous n'avons en tout qu'un seul article consacré à ce mouvement, celui de Gr. Vantzian, publié en 1896¹. Autant que nous sachions, il n'y a pas d'autres études relatives à ce mouvement. Nous exposerons plus loin différentes opinions, exprimées par les savants sur les « Fils du Soleil », et nous signalerons aussi les mentions relatives à ces hérétiques que l'on rencontre chez des auteurs du Moyen Âge.

¹ Gr. VANTZIAN, « La question des Arewordi », *Handes Amsorya*, Vienne, 1896, p. 12-19. Dans la même revue des Mechitharistes de Vienne (1901, n° 2, p. 42-44), Gr. Vantzian a publié « Deux mots sur les Arewordi », où il soutient les mêmes conclusions que dans l'article ci-dessus mentionné.