

matter, and the results at which he arrived are perfectly conclusive within the errors of his experiments. First he measured the pressure of a quantity of dry air kept at constant volume for every degree on Fahrenheit's scale between the freezing and boiling points; then he found the pressure of pure steam in contact with water for every degree through the same range, and lastly the rate of increase of pressure of a quantity of air kept at constant volume, but in contact with water when the temperature varied. The results showed that at each particular temperature the pressure of the air saturated with vapour was exactly equal to that corresponding to the dry air together with that exerted by vapour alone when in contact with water at the same temperature; from which he inferred that there is either no chemical action between the air and vapour, or such action in no way affects the question at issue with gases other than air and vapours other than aqueous. This conclusion is frequently expressed by saying that gases and vapours behave to one another as *vacua*. Most of these experiments were published in a paper in the *Manchester Memoirs*, vol. v.

Dalton was the first to give a table of the maximum pressure of steam for temperatures from 80° to 212° Fahr.

The researches of Desormes, Gay Lussac, and Daniell all tend to corroborate Dalton's theory and the accuracy of his experiments, the results of which may be summed up in two statements, sometimes cited as Dalton's laws, viz.:

I. In a space which contains a liquid and its vapour only, the liquid will continue to evaporate until the pressure of its vapour attains a determinate amount dependent only on the temperature.

II. In a space containing dry air or other gas or gases a liquid will continue to evaporate until the pressure exerted by its vapour alone is the same as if no air or other gas were present.

The more recent researches of Regnault and Andrews have shown that the second law is not quite true. It was, however, a great step in advance, and is sufficiently accurate for all the purposes of chemical analysis and hygrometry. Two or more vapours will act towards one another as *vacua* when, and only when, their liquids have no affinity for one another. When this is not the case, the pressure exerted by the vapour above the surface of the mixed liquids is frequently much less than that which can be exerted by the vapour of the more volatile liquid alone. Thus sulphuric acid will absorb aqueous vapour, and alcohol will absorb ether vapour, reducing the pressure to a small fraction of that exerted by the ether vapour alone. Bisulphide of carbon and paraffin oil also diminish the pressure of ether vapour. Since a mixture of liquids may boil when the pressure of the vapour produced exceeds that to which the liquid is exposed, it follows that a mixture of liquids which have no tendency to dissolve one another will boil at a temperature below the boiling-point of either of them; but when the liquids have an affinity for each other the boiling-point of the mixture will be above that of the more volatile constituent.

The method employed by Gay Lussac for the measurement of the pressure of aqueous vapour at low temperatures has not since been improved upon. He employed a barometer tube whose length was considerably greater than the height of the barometer, and having bent the upper portion (above the mercury) over so as to slope downwards at an angle of about 60° with the horizon, he immersed the closed end in a cold mixture at the temperature for which the pressure was to be measured, and injected a little water into the barometer tube. The vapour produced condensed in the cold part of the tube, and this process of distillation continued until the whole of the water had evaporated from the surface of the mercury,

leaving it free to rise and fall in the tube. The pressure of the vapour was afterwards always that due to the temperature of the coldest part of the tube, for if at any time it exceeded this pressure, condensation would commence and continue until the pressure was reduced to this amount. A barometer tube dipping into the same trough of mercury, and containing no water, was placed by the side of the experimental tube, and the difference in the level of the mercury in the tubes was read by means of a microscope sliding on a graduated pillar, this difference obviously indicating the pressure of the vapour.

The rate at which evaporation takes place has been the subject of much inquiry. In 1772 Dr Dobson of Liverpool (*Phil. Trans.*, lxxvii.) placed a cylindrical vessel, 12 inches in diameter, by the side of a rain-gauge, and, allowing for the rain which fell into it, determined the total evaporation during each month for four years. Dalton and Hoyle imitated more closely the conditions presented by the soil, and filled a vessel three feet in depth with gravel and sand, covering it with earth and sinking it in the ground; a pipe was placed near the top and one near the bottom in order to collect any water which might be free to run off, while the amount of rain received was measured by a rain-gauge placed close to the vessel. At the commencement of the series of observations the contents of the vessel were saturated with water, and the difference between the amount of rain received and of water that escaped by the pipes indicated the amount of evaporation.

From observations of the rate of evaporation of water contained in a shallow tin dish Dalton concluded that at different temperatures in calm air the rate of evaporation is proportional to the maximum pressure of steam at that temperature, diminished by the pressure of the vapour already existing in the air, which pressure is determined from an observation of the dew-point, and that when the air is in motion the rate of evaporation increases with the velocity of the wind. It really depends not only on the temperature, but on the rate at which the vapour can escape from the neighbourhood of the liquid, and evaporation therefore proceeds more quickly when the pressure of the air is diminished. Some considerations on the subject will be found in the article DIFFUSION.

Many of Dalton's experiments were subsequently repeated in a modified form by Daniell, who examined the pressure of steam at various temperatures, and in the presence of other gases, as well as the rate of evaporation. The chief monument of Daniell's work on this subject is his dew-point instrument. Hutton was the first to suggest the determination of the hygrometric state of the air from the cold produced by evaporation; and Sir John Leslie employed the same method, in connexion with the differential thermometer. For the theory of Mason's dry and wet bulb thermometers, or, as it is sometimes called, August's psychrometer, see article DIFFUSION.

In 1823 the determination of the maximum pressure of aqueous vapour at different temperatures was referred to a commission of the Academy of Paris, and the work was undertaken by Dulong and Arago. They measured the pressure of steam at temperatures ranging from 100° C. to 224° C., by observing the compression of a quantity of air imprisoned by mercury in a tube. About the same time a committee of the Franklin Institute of Pennsylvania measured the temperature of steam in contact with water, at pressures varying from one to ten atmospheres; but the results of the two series of experiments did not agree very well. It was partly on this account that Regnault determined to investigate the subject more thoroughly, and it is to him we are indebted for a table of the pressure of aqueous vapour over a range of temperature varying from -32° C. to 230° C. Some of his results, together with

some obtained by Magnus, will be found in the accompanying table. The pressures are measured in millimetres of

Table of Pressure of Aqueous Vapour.

Temperature in Degrees Centigrade.	Pressure in Millimetres of Mercury.		Temperature in Degrees Centigrade.	Pressure in Millimetres of Mercury.	
	Magnus.	Regnault.		Magnus.	Regnault.
-23	...	910	105	907-157	908-41
-20	...	965	110	1077-281	1076-87
-15	...	1053	115	1272-988	1269-41
-10	916	941	118	1408-915	1399-02
-5	1403	1284	120	...	1491-28
0	2109	1963	125	...	1743-88
5	3115	3004	130	...	2030-28
10	4421	4600	135	...	2353-73
15	6471	6534	140	...	2717-68
20	9126	9165	145	...	3125-55
25	12677	12899	150	...	3581-23
30	17395	17391	155	...	4088-66
35	23582	23550	160	...	4651-62
40	31602	31548	165	...	5274-54
45	41893	41827	170	...	5961-66
50	54989	54906	175	...	6717-45
55	71427	71391	180	...	7546-39
60	91965	91955	185	...	8453-23
65	117378	117478	190	...	9442-70
70	148879	148791	195	...	10519-63
75	186601	186945	200	...	11688-98
80	232605	233093	205	...	12955-86
85	287898	288517	210	...	14324-80
90	352926	354643	215	...	15801-33
95	429295	433441	220	...	17390-36
100	524775	525450	225	...	19097-04
	633205	633778	230	...	20926-40
	760000	760000			

mercury at 0° C. 60 metres above the level of the sea in the latitude of Paris. An account of Regnault's researches on this subject will be found in the *Mémoires de l'Institut*, tome xxi, the *Nouvelles Annales de Chimie*, xi. 334, and xiii. 396, and in the first volume of the publications of the Cavendish Society. The researches of Magnus, who arrived independently at nearly the same results as Regnault, were published in *Poggendorff's Annalen*, lxi. 225.

Regnault also determined the density of aqueous vapour in air and in *vacuo* for temperatures between 0° C. and 25° C., and concluded that when the pressure is not very great nor the air nearly saturated (for when it is nearly saturated there is probably deposition of moisture upon the glass vessels), the density may be calculated from the known density of steam at the boiling-point and under ordinary atmospheric pressure by supposing it to obey "the gaseous laws." According to Regnault the mass of a litre of dry air at 0° C., and under a pressure of 760 millimetres of mercury, is 1.293187 grammes, and the density of steam, compared with air at the same pressure and temperature as unity, is .6235. Hence, by help of the table of pressures, the amount of aqueous vapour in any given volume can be determined when we know the dew-point and the temperature of the air. If P denote the pressure of vapour at the dew-point in millimetres of mercury, the mass of vapour in a litre of air at t° C. will be $1.293187 \times \frac{P}{760} \times \frac{273}{273+t}$ grammes.

A curve which represents the relation between the pressure and volume of the unit mass of steam in contact with water as the temperature changes is called the *steam line*, and the corresponding curve for aqueous vapour in contact with ice is called the *hoar-frost line*. Since water can be cooled below the freezing-point without solidifying, it is possible to obtain data for drawing the steam line corresponding to a range of temperature below 0° C. This Regnault did, and his results showed that the steam line so continued does not coincide with the hoar-frost line, but that the two intersect very obliquely just above the freezing-point. Regnault supposed that this must be due to errors of measurement, and drew his steam line so as to coincide with the hoar-frost line; but it has since been shown from theoretical considerations, by James Thomson, that such a

difference must exist, and that the point of intersection of the two curves corresponds to a particular relation between the pressure, volume, and temperature for which ice, water, and steam can all exist together in equilibrium, no other gas or vapour being present in the inclosure. On examining Regnault's results, the intersection of the curves was found to be distinctly indicated by them. At this point the steam line, ice line, and hoar-frost line intersect, and it has therefore been called the triple point. The corresponding temperature is a little above 0.007° C.

The number of units of heat absorbed by the unit of mass of a substance, in passing from the solid or liquid into the gaseous condition, without change of temperature, is called the *latent heat of vaporization*. According to Andrews, the latent heat of steam at 100° C. is 535.9, or a gramme of water in being converted into steam at 100° C. would absorb sufficient heat to raise 535.9 grammes from 0° to 1° C.

Soon after Dr Black enunciated his theory of latent heat, James Watt examined the latent heat of steam produced at different temperatures, and concluded that, when added to the amount of heat required to raise the unit of mass of water from 0° C. to the temperature at which the steam is formed, the result, often called the *total heat of steam*, is the same for all temperatures. This statement is known as Watt's law, but is far from true, for Regnault has shown experimentally that when steam is produced at a temperature of t° C. its total heat is represented by 606.5 + .305t within the limits of error of his experiments. Putting t equal to 100, this formula gives for the total heat of steam at 100° C. the value 637, and its latent heat is therefore about 536, since about 101 units of heat are required to raise the unit mass of water from 0° C. to 100° C. At 0° C. the latent heat of steam is 606.5. The latent heat of steam is greater than that of any other known vapour. According to Favre and Silbermann, the latent heat of the vapours of alcohol and ether are 208.31 and 91.11 respectively; and according to Andrews, they are 202.4 and 90.45 respectively.

In consequence of the great amount of heat absorbed in evaporating, volatile liquids are frequently employed for the purpose of producing cold. The cryophorus of Wollaston consists of a glass tube with a bulb at each end, one of which is partially filled with water. The air is removed by boiling the water and sealing the tube when full of steam. On turning all the water into one bulb, and placing the other in a mixture of pounded ice and salt, the pressure of vapour will be diminished by condensation taking place in the cold bulb, and this allows such rapid evaporation to take place in the other bulb that the water remaining in it becomes readily frozen. Gay Lussac showed that water placed in a vacuum at 8° C., or in perfectly dry air at 2° C., may be frozen by evaporation. The action of Carré's freezing-machine depends upon the heat absorbed by the rapid evaporation of ammonia, which has been liquefied by pressure.

Solid carbonic anhydride dissolved in ether will produce by evaporation *in vacuo* a temperature of about -110° C., and Natterer, by means of a mixture of liquid nitrous oxide and bisulphide of carbon evaporating in *vacuo*, obtained a temperature which he estimated at -140° C.

When a vapour passes into the liquid or solid state a quantity of heat is produced equal to that absorbed in evaporating at the same temperature. Thus, if a gramme of steam be made to pass into 5.36 grammes of water at 0°, it will raise the temperature of the water almost to 100° C., and if steam at 100° C. be blown into a saturated solution of common salt, the temperature will rise to 109° C. before the steam will pass freely through it.

In 1822 Cagniard de la Tour inclosed a quantity of alcohol in a strong tube, so as to occupy about two-fifths of

its volume. A pellet of mercury was employed to separate the alcohol from some air, the compression of which served to measure the pressure in the tube. On heating the alcohol to about 225° C. (according to De la Tour) it expanded to about twice its volume, and then suddenly disappeared, the pressure being (according to the same authority) about 129 atmospheres. When the quantity of alcohol filled a much greater portion of the tube, the tube burst. The experiment was repeated with ether, naphtha, and water, with similar results; but in the case of water it was necessary to add a little sodic carbonate to prevent the water dissolving the glass. The experiments have since been repeated by Faraday, and still more recently by Andrews. It was first noticed by Wolf (*Ann. de Chimie*, xlix. 230), afterwards by Drion (*Ann. de Chimie*, lvi. 221), who examined Wolf's results, experimenting with ether, and with ethylic chloride, and subsequently by Andrews, that the curvature of the surface of the liquid decreases as the temperature is raised, indicating a diminution in the surface tension, while the surface itself becomes less strongly marked, till it entirely loses its curvature, and then vanishes altogether, only a flickering hazy appearance being visible in different parts of the tube. The temperature at which the liquid and gaseous states merge into one another has been called by Andrews the *critical point*. Mendeleef calls it the *absolute boiling-point*. The temperatures and pressures corresponding to the critical points of some substances are given in the following table:—

	Temperature.	Pressure in atmospheres.
Carbonic anhydride.....	30·92° C.	75
Ether.....	187·5	37·5
Alcohol.....	253·7	119·0
Carbonic bisulphide.....	262·5	66·5
Water.....	411·7	f

According to Drion, the critical points of ether, ethylic chloride, and sulphurous anhydride are 190°·5 C., 184° C., and 157° C. respectively. Wolf experimented upon the diminution of the surface tension of ether, water, and other liquids in capillary tubes, and finding it diminish uniformly as the temperature increased between 0° C. and 100° C., he calculated the temperatures at which the surface tension would entirely vanish, and obtained 217° C. for ether and 537° C. for water.

Van der Waals (*Over de Continuïteit van den Gas- en Vloeistofstand*, vii.), by taking into account the mutual attraction of the molecules and the volume occupied by the molecules themselves, has arrived at an equation which represents in a somewhat rough manner the relation between the volume, temperature, and pressure of a substance. When the pressure and temperature are given, there are generally three roots representing the volume in the liquid, gaseous, and unstable states respectively. At the critical point these three roots become equal.

From the values of the volume and pressure of water and steam at 0°, 100°, and 200° C., as deduced by Rankine from the observations of Regnault, Clerk Maxwell has calculated that the critical temperature for water should be about 434° C., the critical pressure about 378 atmospheres, and the critical volume about 2·52 cubic centimetres per gramme.

Dr Andrews has constructed an apparatus for the liquefaction of carbonic anhydride, in which the gas is contained in a thermometer tube whose lower portion is much wider than the upper part, and immersed in mercury contained in a test tube, which is placed in a copper cylinder filled with water, to which pressure is applied by inserting a steel screw. The lower end of the glass tube is open, and the upper part projects beyond the copper cylinder. If the

carbonic anhydride be heated beyond the critical point, pressure being applied so as to keep some of the substance liquid until the critical point is reached, and if the gas be then allowed to cool under this pressure, it will pass continuously into the liquid state without any change in the nature of the contents of the tube being apparent. On relieving the pressure the liquid will boil.

By the simultaneous application of cold and pressure Faraday succeeded in reducing to the liquid state all known gases except hydrogen, oxygen, nitrogen, nitric oxide, carbonic oxide, and marsh gas, and in solidifying many of them. The cooling was effected by the evaporation in vacuo of solid carbonic anhydride dissolved in ether, which produced a temperature of about -110° C.; and by this means carbonic anhydride, chlorine, nitrous oxide, ammonia, cyanogen, and some other gases were liquefied by cold alone at atmospheric pressure. Faraday was of opinion that -110° C. is above the critical temperature of air, oxygen, hydrogen, nitrogen, carbonic oxide, and marsh gas. Andrews subsequently reduced air to $\frac{1}{875}$ of its volume at ordinary pressure and temperature by means of pressure and the cold produced by the same freezing mixture as was employed by Faraday. Hydrogen was reduced to $\frac{1}{875}$ of its volume, oxygen to $\frac{1}{875}$, and nitric oxide to $\frac{1}{875}$, but no liquefaction ensued.

Towards the close of 1877 Cailletet, at Chatillon-sur-Seine, compressed air and other so-called permanent gases in an apparatus very similar to that of Andrews, but provided with a means of suddenly relieving the pressure. The compressed gases were cooled to -29° C., and the cold produced by the sudden expansion when the pressure was relieved was so intense that in each case a liquid spray was produced. About the same time Pictet, at Geneva, succeeded, not only in liquefying all the gases which had previously resisted liquefaction, but also in solidifying hydrogen, his method depending on the cold produced by expansion, as in Cailletet's experiment, but the compressed gases being cooled by him to a much lower temperature before expansion than was employed by Cailletet.

Some of the laws of evaporation admit of easy explanation, in accordance with the dynamical theory of the constitution of bodies. When a particle of liquid in the course of its wanderings reaches the bounding surface with more than a certain normal velocity, it is able to pass through the surface and get quite clear of the liquid, when it becomes a particle of gas or vapour. The number of particles passing through a square centimetre of the surface from the liquid will depend upon the velocity of the liquid particles, and therefore on the temperature of the liquid, but it will be entirely independent of the condition of affairs outside the liquid. Hence, the quantity of liquid which evaporates in a second will not depend upon the pressures of any gases or vapours above the liquid, but only on the temperature. Whenever a particle of vapour moves towards the surface of the liquid and reaches it, it enters the liquid and is condensed. The quantity of vapour so condensed in a second will depend on the velocity of translation of the particles of vapour and the number of such particles in each cubic centimetre of the space above the liquid, but will not be sensibly affected by the presence of particles of other gases or vapours in the same space. As the density of the vapour increases, the number of particles which enter the liquid per second will increase proportionally, and at length will become equal to the number which leave it. When this is the case evaporation appears to cease; but it is not a cessation of evaporation which actually takes place, but an increase in the rate of condensation which produces a condition of dynamical equilibrium. If there be a quantity of another gas above the surface of the liquid, its presence will hinder the diffu-

sion of the vapour just formed, thus causing the amount of vapour near the liquid to approach more nearly to the state of saturation than would otherwise be the case, and thus the rate of condensation will be increased and the apparent rate of evaporation diminished. Nevertheless, we must conclude that the amount of vapour ultimately contained in each cubic centimetre of the space above the liquid, when no further evaporation takes place, will be the same as if no other gas or vapour were present, if we do not consider the space actually occupied by the particles themselves, for the number of particles prevented from entering the liquid by reflection from the foreign gas or vapour, will be exactly equal to the number which after leaving the liquid are reflected and caused to re-enter the liquid by the same means.

For further information on this subject the reader is referred, among other articles, to DIFFUSION, HEAT, and METEOROLOGY.

(w. c.)
EVE, the English transcription, through the Latin *Eva* and Greek *Εὔα*, of the Hebrew name חַוְוָה Havva, which, according to Gen. iii. 20, was given by Adam to his wife because she was "mother of all living." Taken literally, the word means *life*, and in this sense it occurs in Phœnician, though not in Hebrew, which uses as a common noun the slightly different form חַיָּה . So the Septuagint correctly renders the word by *Ζωή*. The rendering *lifegiver* (Symmachus, *Ζωογόνος*) is philologically less satisfactory, though still supported by Riehm.¹

In the Old Testament Eve is mentioned only in the so-called Jehovistic narrative of Gen. ii.-iv. In this narrative, which it is unnecessary to repeat, the original creation of woman is so set forth as to teach the ethical value and dignity of the relation of marriage, which, according to God's original ordinance, is not founded on sensual instincts, but corresponds to a necessity of that higher part of man's nature which raises him above the brute creation (Gen. ii. 18-20). The relation of the wife to her husband is one of dependence (comp. 1 Tim. ii. 13, but especially 1 Cor. xi. 8, 9, which rightly interprets the significance of the creation of Eve from Adam's rib) but not of subjection. The woman is not the servant of her husband, but a "help meet for him"—more literally a help corresponding to him—without which he would be himself incomplete. And so marriage constitutes the closest human relationship, and establishes between husband and wife a union, or rather a unity, stronger than the ties of blood (Gen. ii. 24). On the other hand, the dominion of the husband over the wife characteristic of antique society is represented as a fruit of the fall (Gen. iii. 16), and connected with the predominance of sensual passion (desire) over the ethical attachment of the sexes. These ideas reappear more or less clearly in various parts of the Old Testament,—in the description of true love in Canticles, and in what is said of marriage in the Proverbs, especially in the doctrine, Prov. ii. 17, that marriage is a "divine covenant." But there is no direct reference to the narrative of Genesis in the other canonical books of the Old Testament, though some interpreters seek an allusion to the creation of Adam and Eve in the obscure passage Mal. ii. 15. In the apocryphal book of Tobit (viii. 6, 7) the pure relation of true marriage is illustrated by reference to Gen. ii.;² but it is only in the New Testament that the original ideal of married life is authoritatively set forth by our Lord as the rule of a higher morality than that of Moaism (Mat. xix.; Mark x.) The abrogation of

the one-sided law of divorce, and the restoration of marriage to the ideal instituted before the fall, involve the abolition in Christian society of the antique subjection of woman (comp. Hosea ii. 16). The other parts of the history of Eve have less importance for biblical theology and ethics, and receive little more than casual notice in the New Testament (2 Cor. xi. 3; 1 Tim. ii. 14, 15).

To this notice of the biblical materials on the subject may be added a brief indication of the legendary additions to the narrative of Genesis, and some account of the way in which that narrative has been treated by theologians and scholars in different ages.

Legends.—The earliest source for the legendary history of Eve which remains to us is the book of Jubilees or Leptogenesis, a Palestinian work, composed before the destruction of the temple by Titus (see APOCALYPTIC LITERATURE). In this book, which was largely used by Christian writers, we find a chronology of the lives of Adam and Eve and the names of their daughters,—Avan and Azura.³ The Targum of Jonathan informs us that Eve was created from the thirteenth rib of Adam's right side, thus taking the view, still soberly maintained by Delitzsch, that Adam had a rib more than his descendants. The Jewish Midrash and the Talmud contain many other stories, always absurd and often disgusting, of which a sufficient account may be found in Bartolucci's *Bibliotheca Rabbinnica*, and Eisenmenger's *Entdecktes Judenthum*. The curious reader may also consult Breithaupt's Latin translation of Jarchi *On the Pentateuch* (Gotha, 1710), and Wagenseil's *Sota* (pp. 637, 751). Some of the Jewish legends show clear marks of foreign influence. Thus the notion that the first man was a double being, afterwards separated into the two persons of Adam and Eve (*Berachot*, f. 61; *Erubin*, f. 18), may be traced back to Philo (*De mundi opif.*, § 53; comp. *Quæst. in Gen.*, lib. i. § 25), who borrows the idea, and almost the words, of the myth related by Aristophanes in the *Platon's Symposium*, which, in extravagant form, explains the passage of love by the legend that male and female originally formed one body. This myth, which is treated with much respect by later Platonists, may have come from the East, but it is not Semitic. There is an analogous Eranian legend in the Bundeshesh,⁴ and an Indian legend, which, according to Spiegel, has presumably an Eranian source.⁵

Legendary developments of the history of Adam and Eve were not confined to the Jews, but were equally popular in the Christian church and among the heretical sects. The apocryphal literature of the subject is noticed in the article ADAM; but a reference may here be added to the history of Adam and Eve published by Ceriani, *Monumenta sacra et profana*, tom. v., Milan, 1868. An idea of the contents of this literature may be derived from Roensch's *Buch der Javriiden*. See also Fabricius, *Codex Pseudep. V. T.*, p. 95 seq.

History of Interpretation.—The following remarks are supplementary to what has been already said in the article ADAM.

Minds trained under the influence of the Jewish Haggada, in which the whole biblical history is freely intermixed with legendary and parabolic matter, would not naturally formulate the question how far the story of Gen. ii.-iv. is to be regarded as literal history? But that question necessarily arose when Jewish learning came into contact with Greek thought. Josephus, in the prologue to his *Archæo-*

¹ Other ancient etymologies, which have no scientific value but are in part connected with curious speculations, may be found in the *Onomasticon* (E. I. Lagarde, 1870) and in Fabricius, *Codex Pseudep. V. T.*, p. 103. The recent conjecture of Kleinert, who connects the name with Arabic *el havvâni*, the *longest ribs*, is philologically inadmissible.

² Another reference to the creation of woman appears in the Latin text of Ecclesiasticus xvii. 5, but is lacking in the Greek.

³ These names underwent many transformations in the course of time. The various forms are carefully catalogued by Roensch, *Buch der Jubilæen*, p. 373 (Leipzig, 1874). Jewish, Mahometan, and Christian notions about the children of the Protoplasts are collected with his usual learning by Selden, *De Jure Naturali, &c.*, lib. v. cap. 8.

⁴ Spiegel, *Erânische Alterthumskunde*, vol. i. p. 511.

⁵ Muir's *Sanscrit Texts* vol. i. p. 25. cf. Spiegel, *op. cit.*, vol. i. p. 458.