ἀστρίους μὲ δυνητικὴν σύστασιν 57,2 % ἀνορθίτου, ἄρα λαβραδόριον, ὁ δὲ κατὰ Λακρουὰ τύπος του ἦτο:

II (III).4 (5).3 (4).'4 [2.1.1(3).2]

RÉSUMÉ

L' auteur revient sur une de ses propres communications à l'Académie du 11/6/1942 intitulée «Nouvelle contribution à l'étude du crictallophyllien du Pélion (Théssalie)», qu'il complète par la présente au point de vue chimique.

Le tuff volcanique nétamorphisé qu'il avait découvert en 1942 dans les glaucophanites de la région de Makrinitsa, se présente comme un tuff augitique à labrador non exprimé, appartenant à la famille des gabbros calcoalcalins, dont il donne la formule d' après Lacroix, et il prouve que le type magmatique d' après Niggli est miharaïtique. Enfin il compare la roche aux andésites labradoriques quartzifères du sommet et du versant oriental du Pélion, étudiés par lui en 1940, dont la similitude magmatique avec le tuff en question est complète.

ΜΕΤΕΩΡΟΛΟΓΙΑ. — **On the correlation between monthly mean temperature and monthly mean relative humidity,** by *Leon N. Carapiperis* *. Ἀνεκοινώθη ὑπὸ τοῦ κ. Βασιλείου Αἰγινήτου.

The statement that the variation of relative humidity is converse to that of air temperature is correct only when dealing with the diurnal variation of these elements.

In fact, as was shown from the data of the Meteorological Station of the National Observatory of Athens (period 1900—1929) the coefficient of correlation between the hourly values of mean air temperature and humidity amounts to — 0,99[3].

If, however, the mean daily or monthly temperature is compared with the mean daily or monthly relative humidity, the correlation is not so clear as would expected.

Hatakeyama[2] investigating the correlation between the daily mean

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* Λ. Ν. ΚΑΡΑΠΙΠΕΡΗΣ: «Περὶ τῆς συσχετίσεως μεταξὺ μέσης θερμοκρασίας καὶ σχετικῆς ὑγρασίας τοῦ ἀέρος».

temperature and the mean relative humidity in Tokyo, for different months of the year, during the period 1932—1937, found the following coefficients:

J	F	M	A	M	J	J	A	S	O	N	D
+0,28,	+0,07,	+0,07,	+0,03,	+0,01,	−0,05,	−0,049,	−0,60,	−0,17,	−0,05	+0,10,	+0,10

A positive correlation, the high temperature corresponding to the high relativehumidity, appears from November with the winter monsoon, while a negative correlation, the high temperature corresponding to the low relative humidity, is seen during the summer monsoon.

This paper deals with the correlation between the monthly mean temperature and the monthly relative humidity, and it is based on observations made in the Meteorological Station of the National Observatory of Athens during the period 1901—1940.

Table I gives the calculated coefficients of correlation between the monthly mean temperature and humidity, while figure I presents their annual variation.

Table I

January	+ 0,15	July	— 0,61
February	+ 0,36	August	— 0,60
March	— 0,05	Septemper	— 0,36
Avril	— 0,42	October	— 0,31
May	— 0,65	November	— 0,00
June	— 0,77	December	+ 0,09

As is shown these coefficients are much greater than those found by Hatakeyama for the daily mean temperature and humidity. A positive correlation appears in the winter months while in all the others the correlation is negative.

The highest positive correlation appears in February and the highest negative correlation in June.

The positive correlation, the high temperature corresponding to the high relative humidity and the low temperature to the low relative humidity, which appears in the winter months, cam be explained as follows:

During the winter and especially in January and February, the low temperatures appear with the establishment of the Siberian anticyclone, or when moving anticuclones approach the Balkan Peninsula, or wedges of high pressure reach the East Mediterranean.

In all the above cases the air masses which move over Greece, originate from a continental source and therefore are mainly cold and relatively dry. i. e. days with a low mean temperature will have a low relative humidity (positive correlation).

On the other hand, during the winter months the depressions which originate either from the Atlantic ocean or from the West Mediterranean, moning over Greece provide a source of wet and warm air ; therefore days with a mean temperature relatively high have a high relative humidity (positive correlation).

Only when spells of cloudless and fine weather occur, during this season a negative correlation would appear.

In March and November the coefficients of correlation are small because the weather conditions in these months are very variable and the interchange of air masses continual. These months have sometimes the characrer of the months of the cold season and sometimes the character of the months of warm season.

The greater negative correlation between the mean monthly air temperature and relative humidity is seen from April to October and it is due to the system of the prevailing winds.

Indeed, as is known, during the warm season either the etesians or the sea-breeze blow over the Athens area [1].

The sea - breeze occurs on all fine days when the general pressure gradients are weak. It is a fresh and wet sea - wind which, blowing over the Athens plain increases the relative humidity and decreases the air temperature (negative correlation).

On the other hand the etesians in the above areas are warmer than the sea - breeze [1]. These winds transport mainly continental dry air masses which as they move southward become warmer, while its relative humidity decreases progressively (negative correlation).

The fact that the coefficients of correlation from May to August are absolutaly greater than those of the winter months can be explained if the definition of relative humidity is taken into consideration.

As is well known the relative humidity R is expressed by

$$R = \frac{e}{E} \cdot 100\,^{0}/_{0}$$

where e and E denote the partial pressure of water vapour and the saturation vapour pressure respectively.

During the warm season when the sea-breeze blows over the Athens area the partial pressure e increases while the saturation vapour pressure E decreases, because the sea-breeze is wet and fresh; consequently the fraction $\frac{e}{E}$ increases.

If, also, the Etesians blow, the partial pressure of water vapour decreases while the saturation vapour pressure increases, because the Etesians are dry and warm; therefore the ratio $\frac{e}{E}$ decreases considerably.

During the winter, however, when the moist and warm winds of the warm sector of the moving depressions and generally of the S - SW directions blow over Greece, both e and E increase and the ratio $\frac{e}{E}$ either increases or decreases. The same phenomenon occurs in the case of the cold and relatively dry northern winds which reduce the partial and the saturation vapour pressure.

From all the above it can be concluded that the study of the correlation between mean daily or monthly air temperature and relative humidity would be interesting for the climate of different regions.

BIBLIOGRAPHY

1. *Carapiperis L. N.*, Influence of the Etesian winds on the summer temperature in Athens. *Meteor. Mag. Vol. 82. 1953.*

2. *Hatakeyama H.*, On the correlation between the daily mean temperature and daily mean relative humidity. *The Geogr. Mag. Vol. XIV. No 1. Tokyo. 1946.*

3. *Livathinos A.*, Climatographie de la Grèce. C Humidité. Athens 1938. (Publications de l'Observatoire National d'Athènes).

ΠΕΡΙΛΗΨΙΣ

Ἐν τῇ μελέτῃ ταύτῃ ἐξετάζεται ἡ μεταξὺ θερμοκρασίας καὶ σχετικῆς ὑγρασίας ὑφισταμένη σχέσις βάσει παρατηρήσεων ἐν τῷ Ἀστεροσκοπείῳ Ἀθηνῶν κατὰ τὴν περίοδον 1901—1940, τὰ κύρια δὲ συμπεράσματα ἐκ ταύτης εἶναι τὰ ἀκόλουθα:

1) Οἱ συντελεσταὶ συσχετίσεως μετὰ τῆς θερμοκρασίας καὶ σχετικῆς ὑγρασίας τοῦ ἀέρος παρουσιάζουν μεγάλας ἀρνητικὰς τιμὰς μόνον εἰς τὰς ἡμερησίας πορείας τῶν ἐν λόγῳ στοιχείων.

2) Μεταξὺ τῶν μέσων μηνιαίων τιμῶν τῶν ἀνωτέρω στοιχείων οἱ συντελεσταὶ συσχετίσεως δὲν παρουσιάζουν μεγάλας τιμὰς οὔτε εἶναι ὁμόσημοι.

3) Οἱ ἐν λόγῳ συντελεσταὶ παρουσιάζουν ἁπλῆν ἐτησίαν κύμανσιν μὲ μέγιστον κατὰ Φεβρουάριον καὶ ἐλάχιστον κατὰ Ἰούνιον.

4) Ἡ συσχέτισις μεταξὺ θερμοκρασίας καὶ σχετικῆς ὑγρασίας παρουσιάζεται θετικὴ κατὰ τοὺς χειμερινοὺς μῆνας.

5) Ἡ ἐτησία πορεία τῶν συντελεστῶν συσχετίσεως ἐξηγεῖται, ἐὰν ληφθῶσιν ὑπ' ὄψιν αἱ καιρικαὶ καταστάσεις, αἱ ἐπικρατοῦσαι κατὰ τὰς διαφόρους ἐποχάς.

6) Αἱ τιμαὶ καὶ ἡ πορεία τῶν συντελεστῶν συσχετίσεως ἀποτελοῦν οὐσιώδη κλιματικὸν χαρακτηριστικὸν τῶν διαφόρων περιοχῶν.

ΗΛΕΚΤΡΟΤΕΧΝΙΑ.— **Προσδιορισμὸς μηχανικῶν χαρακτηριστικῶν ἠλεκτρικῶν μηχανῶν,** ὑπὸ ***Δανιὴλ Μ. Λέκκα****. Ἀνεκοινώθη ὑπὸ τοῦ κ. Βασιλ. Αἰγινήτου.

Ἓν νέον μαθηματικὸν ἐργαλεῖον τὸ ὁποῖον χρησιμοποιεῖ σήμερον ἡ Φυσικὴ εἶναι ὁ τανυστικὸς λογισμός.

Οὗτος δὲν εἰσάγει τίποτε τὸ νέον εἰς τὴν ἐπιστήμην, ἀλλὰ γενικεύει καὶ ἁπλοποιεῖ τοὺς μαθηματικοὺς τύπους καὶ θέτει τάξιν εἰς τοὺς μαθηματικοὺς συλλογισμοὺς καὶ τὰς μεθόδους ὑπολογισμοῦ. Ὁ μηχανικὸς δύναται νὰ τὸν χρησιμοποιήσῃ ἐπωφελῶς εἰς τὴν μηχανικήν, τὴν ἀντοχὴν τῶν ὑλικῶν, τὸν ἠλεκτρισμὸν κ.λ.π.

Ὁ πρῶτος ὅστις εἰσήγαγε τοὺς τανυστὰς εἰς τὴν ἠλεκτροτεχνίαν εἶναι ὁ Gabriel Kron, ὁ ὁποῖος παρουσίασε τῷ 1935, διὰ τὸ διεθνὲς βραβεῖον ἠλεκτρισμοῦ Montefiore (Λιέγης), ἀξιοσημείωτον διατριβὴν ὑπὸ τὸν τίτλον: «The application of Tensor Analyses to Electrical Engineering Problems». Ἐχρησιμοποίησα τὴν νέαν αὐτὴν μέθοδον τοῦ Γαβριὴλ Κρὸν εἰς τὴν κατάστρωσιν τῶν ἐξισώσεων πλείστων ἠλεκτρικῶν μηχανῶν, ἕνα δὲ παράδειγμα ἐφαρμογῆς τῆς ὡς ἄνω μεθόδου ἔστειλα πρὸς δημοσίευσιν εἰς τὰ «Τεχνικὰ Χρονικά».

Εἰς τὴν παροῦσαν διατριβὴν διετύπωσα ἕνα γενικὸν τύπον ἐκφράζοντα τὴν ροπὴν Στρέψεως ὅλων τῶν ἠλεκτρικῶν μηχανῶν ἢ καὶ ὁμάδος μηχανῶν, ἰσχύοντα δι' οἱανδήποτε περίπτωσιν· τοῦτο δὲ τῇ βοηθείᾳ τανυστῶν, τῶν ὁποίων αἱ συνιστῶσαι εἶναι συναρτήσεις τῶν δεδομένων ἑκάστης ἠλεκτρικῆς μηχανῆς.

Κατωτέρω ἀναπτύσσεται ὁ τρόπος εὑρέσεως τοῦ τανυστικοῦ τούτου τύπου ὑπὸ τὰς ἀκολούθους προϋποθέσεις:

1) Ἡ διάταξις τοῦ μαγνητικοῦ πεδίου ἐντὸς τῆς μηχανῆς εἶναι ἡμιτονοειδής.

2) Ὁ συντελεστὴς μαγνητικῆς δεκτικότητος μ εἶναι σταθερός.

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* DANIEL LECCAS: Détermination des caractéristiques mécaniques des Machines Electriques.