

- No. 2. Continuous line : ceph. ind. of 200 female Armenians, measured in Beirut by KRISCHNER.
Dotted line : ceph. ind. of 136 chiefly male Armenians, measured by KAPPERS in Beirut and Constantinople.
- No. 3. Ceph. ind. of 4752 male Bosnians, measured by CWIRKO-GODYCKI; expressed in percentages.
- No. 4. Continuous line : cranial indices of 1124 Tirolese skulls measured by FRIZZI.
Dotted line : cranial ind. of 1319 Tirolese skulls measured by TAPPEINER.
Both expressed in percentages.
- No. 5. Cranial ind. of 1000 Bavarian skulls, measured by RANKE; expressed in percentages.
- No. 6. Ceph. ind. of 36202 male Lombardians, measured by LIVI; expressed in percentages.
- No. 7. Cranial indices of 700 mediaeval skulls from the Alsace, measured by BLIND.
- No. 8. Continuous line : cranial ind. of 172 Auvergnate skulls, recorded by TOPINARD.
Dotted line : cranial index of 74 English Round Barrow skulls, recorded by the same.
- No. 9. Continuous : Ceph. ind. of 214 girls from 15—19 years, measured at Zürich by GRÜTZNER.
Dotted line : cranial index of 69 skulls from Vorarlberg (Wallis), measured by WACKER.
- No. 10. Lower (thin) continuous line (dots) : cranial index of 33 Dissentis skulls, measured by RÜTIMEYER and HIS. Second (thicker) continuous line : the same plus the cranial ind. of 41 Graubünden skulls, measured by BLIND (crosses).
High continuous line : cranial indices of 252 Dissentis skulls measured by WETTSTEIN.
Dotted line : cranial indices of 175 Baden skulls, measured by MIES.

Physics. — *Measurements about the velocity of sound in neon gas.* By W. H. KEESOM and J. A. VAN LAMMEREN. Abstract of Communication No. 234c from the Kamerlingh Onnes Laboratory.

(Communicated at the meeting of October 27, 1934).

The velocity of sound in neon gas has been measured from 0° C down to liquid neon temperatures. Therefor a new vapour cryostat for obtaining the last mentioned temperatures was designed.

From the measurements down to liquid oxygen temperatures, making use of values of B (the second virial coefficient) deduced by CATH and KAMERLINGH ONNES, values of C_p/C_v for $p=0$ were calculated. The results agree within 0.2 % with the expected value 1.667.

At the temperatures 27.80 and 26.25° K the dependence of the velocity of sound on pressure was investigated.

From the results in combination with CATH and KAMERLINGH ONNES' values of B the following values were calculated :

T (°K)	30	40	50	60	70	80
$-10^3 B$	4.40	2.48	1.55	1.02	0.68	0.46

Values of atomic heats at constant pressure and at constant volume for the temperatures 27.80 and 26.25° K and pressures from 0 to 1.0 or 0.6 atm respectively were calculated.

Physics. — *On the separation of neon into its isotopic components by means of rectification.* By W. H. KEESOM, H. VAN DIJK and J. HAANTJES. Abstract of Communication No. 234d from the Kamerlingh Onnes Laboratory.

(Communicated at the meeting of October 27, 1934).

A rectifying apparatus with 60 pans, entirely made of glass, has been constructed for the purpose of rectification of liquid neon in order to separate the isotopes of this element in relatively large quantities. It consists principally of the column proper of about 2 m length, an outer Dewar glass of the same length and above these glasses another vacuum vessel of special construction, to contain the cooling liquid, in this case liquid hydrogen.

In September 1933 a rectification was made which lasted 4 days. 420 l neongas was liquefied in the column. The rectification was divided into three periods. In the first period the liquid was rectified for 18 hours without taking off any gas. At the end of this time a sample (I) of 4 l was taken from the condensation space. In the second period of 64 hours a quantity of 280 l neon gas was regularly taken off from the condensation space. In the third period of 10 hours rectification was again carried out without taking off anything. At the end of this last period a sample (II) of 5 l was taken from the still. 300 l liquid hydrogen were used in the cooling. The gas density determinations gave as results:

Sample I	S_{0_I}	= 0.00089580	atomic weight	20.091
„ II	$S_{0_{II}}$	= 0.00091733	„ „	20.574
	S_{0_n}	= 0.00089990	„ „	20.183

S_0 is the density at standard conditions, S_{0_n} is the density of normal neon.

If we compare our results with theory it appears that the efficiency of the column is about 50 % of the theoretical value. The better results than those formerly obtained in our rectifying experiments may be attributed to the following: The great number of pans, a large reflux ratio and a great regularity of the rectification process.