with Lummer-Gehrcke plates, are cited for the sake of comparison :—

λ = 5790 (*Yellow line*).

Observed δλ	Intensity	Janicki	Baeyer
−0·266	1/9	−0·251	—
−0·170	1/10	−0·187	−0·19
−0·122	1/4	−0·119	−0·127
−0·077*	1/7	—	—
−0·032*	1/6	—	—
Principal Line		Principal Line	Principal Line
+0·035*	1/4	—	—
+0·073	1/8	+0·084	—
+0·142	1/8	+0·132	+0·139
+0·189	1/6	+0·168	—
+0·235	1/4	+0·230	+0·237

λ = 5461 (*Green line*).

Observed δλ	Intensity	Janicki	Baeyer
−0·247	1/3	−0·232	−0·250
−0·216*	1/8	—	—·
−0·175*	1/9	—	—
−0·142*	1/8	—	—
−0·110	1/4	−0·099	−0·107
−0·084	1/2	—	−0·072
−0·058	1/4	−0·066	−0·051
−0·024	1/2	—	−0·025
Principal Line		Principal Line	Principal Line
+0·033*	1/7	—	—
+0·068*	1/3	+0·088	+0·087
+0·109*	1/4	—	—
+0·143	1/8	+0·133	+0·132
+0·201*	1/8	—	—
+0·230	1/7	—	+0·222

Some of the lines not observed by Janicki and Baeyer, and marked with an asterisk, seem to be new, but the scanty literature on spectroscopy at my disposal does not permit me to conclude which of them were observed for the first time.

Of the numerous satellites of the green line, −0·232, observed by Janicki, is separated into two lines, −0·247 and −0·216, and −0·099 into two, −0·110 and −0·084. The lines −0·216 and +0·033 are evidently the same as −0·208 and +0·032 given by Gray and Stewart. The satellite +0·087 observed by Baeyer, +0·088 by Janicki, +0·093 by Gehrcke and Baeyer, +0·082 by Fabry and Perot, and +0·084 by Houston is resolved into two components of nearly equal intensity, +0·068 and +0·109. Gray and Stewart give only +0·067. The green line was separated into twenty-one components by Lummer and Gehrcke with a single interference plate; here it is separated into fifteen lines. Some of these lines will be separated into components by increasing the resolving power.

The spectrum produced by heating an ordinary vacuum tube of **H**-shape containing a few drops of mercury, and excited by an induction coil, gave results almost coinciding with those of Janicki, as observed by Mr. Amano and myself. The appearance of the satellites seems to be influenced greatly by the construction of the tube and the mode of excitement.　　　　　　　　H. NAGAOKA.

Physical Institute, Tokyo University, March 15.

Mendelian Characters among Shorthorns.

I WAS much interested in Prof. James Wilson's letter in NATURE of April 2, and I sent the number to my friend, Mr. William Duthie, of Collynie, Tarves, Aberdeenshire, a well-known breeder of Shorthorns of the first class, in the hope that Mr. Duthie, from his own experience, might check some of the numbers given by Prof. Wilson. Mr. Duthie sent my note to Dr. Thomas F. Jamieson, of Ellon, who is also a famous breeder of Shorthorns, as well as an agricultural chemist of repute. Dr. Jamieson wrote to Mr. Duthie, and I have the authority of both to send the following extract from his letter, which will interest, not only Prof. Wilson, but also those who may be collecting statistics regarding the Mendelian aspects of the problem of heredity :—

" I have long been of opinion that the Shorthorns have arisen from a combination of a red breed and a white one.

There is a remarkable tendency in them to produce animals which are *entirely* white (unless, perhaps, the ears), more so, I think, than those which are entirely red, and I find that of the white calves the majority are females. I would like you to test this latter point from your own knowledge, in order to see if you also find it so. There is no doubt that a red bull mated with a red cow will almost always produce a red calf, more especially if the bull's own parents were both red, and similarly with white upon white. My red bull " Topsman," 63,447, gave me 113 calves, and not one of them white. He was mated eleven times with a white cow, and the result was ten roans and one red. He was mated sixty times with a red or red-and-white cow, and *every one* of the calves was red. He was mated forty-two times with a roan cow, with the result that twenty-three of the calves were roan and nineteen red. " Topsman " had white socks on the hind shanks, and several of his calves had so too, probably about twenty-six of them, or 23 per cent."

　　　　　　　　　　　　JOHN G. McKENDRICK.

Maxieburn, Stonehaven, April 11.

Ionisation of Air by Ultra-violet Light.

SINCE Lenard has shown that ionisation of the air is produced by light of short wave-length, it has seemed advisable to extend his researches into the region of the extreme ultra-violet, discovered by Schumann, and to investigate the effect on air of light of wave-length below λ 1850.

For this purpose, a discharge tube filled with hydrogen to a pressure of 1 mm. of mercury, and a screen-cell, were used, both similar to those described by Prof. Lyman in the *Astrophysical Journal*, March. Below the screen-cell was a chamber where ionisation took place. Dry, dust-free air was blown through this chamber into a cylindrical condenser system. The ionisation produced by the light from the vacuum tube was measured by the charge acquired by one of the cylinders, the other being kept at a constant potential. The air pressure in the screen-cell could be varied at will. Precautions were taken to guard against surface effects.

Under these conditions, it has been found that the ionisation increases in a most marked degree as the pressure in the screen-cell is decreased. It is, therefore, evident that ionisation is produced in air by light from that part of the spectrum discovered by Schumann, and that the effect increases considerably with decrease in wave-length, at all events, in the neighbourhood of λ 1800.

It is proposed to investigate the effect in some of the elementary gases.　　　　　　FREDERIC PALMER, jun.

Haverford College, Haverford, Pa., U.S.A.,
　　April 10.

THE INTERNATIONAL MATHEMATICAL CONGRESS AT ROME.

THE congress of 1908 has been considerably larger than its three predecessors. Up to April 4, the official membership list contained 648 names, but later additions have increased the number of those present to about 530 members, and 167 ladies accompanying them. The weather has been of the same unsettled character that we are accustomed to describe as " British Association weather," but the brilliancy of the gatherings has not been materially affected by the spells of rain.

The proceedings commenced with a reception at the University, given by the rector (Prof. Tonelli) on Sunday, April 5, but the congress was formally opened on the following morning in the Hall of the Horatii and Curiatii at the Capitol, in the presence of the King, when addresses were read by Mr. Nathan, Mayor of Rome, by Prof. Blaserna, representing the Reale Accademia dei Lincei, and by the Minister of Public Instruction.

A discourse was afterwards read by Prof. Vito Volterra on mathematical progress in Italy during the