could create such a School of Mathematics as might go some way at least to revive the old scientific renown of Oxford, and to light such a candle in England as, with God's grace, should never be put out.[1]

TABLES OF SINGULARITIES AND FORMULÆ REFERRED TO IN THE PRECEDING LECTURE

CHART 1.

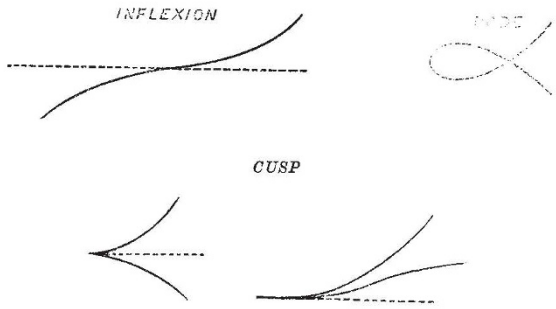

CHART 2.—PROTOMORPHS

Binariants	*Reciprocants*
a	a
$ac-b^2$	$3ac-5b^2$
$a^2d-3abc+2b^3$	$9a^2d-45abc+40b^3$
$ae-4bd+3c^2$	$5a^2e-35abd+7ac^2+35b^2c$
$a^2f+5abe+2acd+8b^2d-6bc^2$	$45a^3f-420a^2be-42a^2cd+1120ab^2d$ $-315abc^2-1120b^3c$
$ag-6bf+15ce-10d^2$	$a^2g-120abf-450ace+792b^2e$ $+588ade^2-2772bcd+1925c^3$

CHART 3.

No. 1. a
No. 2. $3ae-5b^2$
No. 3. $9a^2d-45abc+40b^3$
No. 4. $45a^3d^2-450a^2bc+192a^2c^3+400ab^3d+165ab^2c^2-400b^4c$

$$x=\int\frac{dt}{\sqrt{\kappa(1-15t^2+15t^4-t^6)+\lambda(3t-10t^3+3t^5)}}+\mu$$

$$y=\int\frac{tdt}{\sqrt{\kappa(1-15t^2+15t^4-t^6)+\lambda(3t-10t^3+3t^5)}}+\nu$$

$$V=3a^2\delta_b+10ab\delta_c+(15ac+10b^2)\delta_d+(21ad+35bc)\delta_e$$ $$+(28ae+56bd+35c^2)\delta_f+\ldots$$

[1] I have purposely confined myself in my lecture to reciprocants, indicatives of properties of plane curves, but had in view to extend the theory to the case of higher dimensions in space leading to reciprocants involving the differential derivatives of any number of variables $y, z, \ldots$ M. Halphen, with whom I have had the great advantage of being in communication during my stay in Paris, has anticipated me in this part of my plan, and has found that the same method which I have used to obtain the Annihilator V applied to a system of variables leads to an Annihilator of very similar form to V, and at my request will publish his results in a forthcoming number of the *Comptes rendus*. Thus the dominion of reciprocants is already extended over the whole range of forms unlimited in their own number as well as in that of the variables which they contain

CHART 4.—COEFFICIENTS OF ANNIHILATOR V

1	4	3			
1	5	10			
1	6	15	10		
1	7	21	35		
1	8	28	56	35	
1	9	36	84	126	
1	10	45	120	210	126

CHART 5.—RECIPROCANT TRANSFORMATIONS

Grub	*Chrysalis*			*Imago*		
$\frac{d^2y}{dx^2}$	$\frac{d^2\phi}{dx^2}$	$\frac{d^2\phi}{dxdy}$	$\frac{d\phi}{dx}$	$\frac{d^2\Phi}{dx^2}$	$\frac{d^2\Phi}{dxdy}$	$\frac{d^2\Phi}{dxdz}$
	$\frac{d^2\phi}{dxdy}$	$\frac{d^2\phi}{dy^2}$	$\frac{d\phi}{dy}$	$\frac{d^2\Phi}{dxdy}$	$\frac{d^2\Phi}{dy^2}$	$\frac{d^2\Phi}{dydz}$
	$\frac{d\phi}{dx}$	$\frac{d\phi}{dy}$	•	$\frac{d^2\Phi}{dxdz}$	$\frac{d^2\Phi}{dydz}$	$\frac{d^2\Phi}{dz^2}$

$$(a)\qquad (M)\qquad (H)$$
$$(n-1)^2\left(\frac{d\phi}{dy}\right)^3 a+H+\left\{\frac{d^2\Phi}{dx^2}\cdot\frac{d^2\Phi}{dy^2}\quad\left(\frac{d^2\Phi}{dxdy}\right)^2\right\}\Phi=0.$$

$\frac{dy}{dx}\frac{d^3y}{dx^3}-\frac{3}{2}\left(\frac{d^2y}{dx^2}\right)^2$ is the Schwarzian, otherwise written $tb-\frac{3a^2}{2}$.

CHART 6.—THE H RECIPROCANTIVE PROTOMORPH

U	W	*The Vermicular Operator*
$65a^4h$	$120a^3cf$	$\lambda a\delta_b+\mu b\delta_c+\nu c\delta_d+\pi d\delta_e+\ldots$
$-975a^3bg$	$-200a^2b^2f$	
$-990a^3cf$	$-195a^2de$	*Examples*
$+6200a^2b^2f$	$-145a^2bce$	$a\delta_b+b\delta_c+c\delta_d+d\delta_e+\ldots$
$+4690a^2bce$	$+1000ab^3e$	$a\delta_b+2b\delta_c+3c\delta_d+4d\delta_e+\ldots$
$-1540ab^3e$	$+1365a^2bd^2$	$3a\delta_b+8b\delta_c+15c\delta_d+24d\delta_e+\ldots$
$-2730a^2bd^2$	$-777a^2c^2d$	
$+7161a^2c^2d$	$-22260ab^2ca$	☞ b^4d does not appear in either U or W.
$+3080ab^2cd$	$+2485abc^3$	
$-24255abc^3$	$+105b^2c^2$	
$+25410b^3c^2$		

$H+\Lambda U+MW$

Λ and M are arbitrary numbers.

New College, Oxford, January 6

THE GEOLOGY OF MALAYSIA, SOUTHERN CHINA, &c.

THERE is a remarkable uniformity in the geology of a very large portion of Southern Asia and its dependent islands, especially from the Malay peninsula, as far east as the Philippines, and as far north as the Chinese continent. In the Malayan peninsula we have an elevated granitic axis. At the base of this there are Palæozoic schists and slates. Above these in a few places there are limestones in detached weathered masses. This limestone is often crystalline, white, blue, and black. In a few cases there are traces of stratification, but no fossils.

In a recent journey through Pahang I found precisely the same formations on the eastern side of the peninsula, with only this addition, that there is a belt of trachytic rocks of modern origin forming detached hills between the main range and the sea.

In Sumatra I learn that there are the same formations from the granite upwards. I cannot confirm this from personal observation, as I have travelled very little in the island. The mountain axis is far from the Straits of Malacca, and difficult of access. As far as I can judge from the geology of such large islands as Bilitou, Bintang, and Banca, the mountains are probably granitic and stanniferous.

Proceeding eastward and northerly, detached granite islands are met with. They are thickly strewn through the intermediate ocean. Those I have seen, such as the north and south Natunas, and other similar outliers, on voyages between Java, Singapore, Borneo, China, Cochin