66. Given two opposite sides of a quadrilateral capable of being inscribed in a given circle, and the sum of the other two sides ; describe the quadrilateral. To what extent is the solution ambiguous?

67. Take a point P outside a given circle whose centre is C; a circle is drawn through P cutting PC at an angle a, and touching the given circle externally; show that its diameter equals

$$(2rh+h^{*}) \div \{r+(r+h)\cos(90\pm a)\}.$$

when r donotes the radius of the given circle, and r+h the line CP. Find under what circumstances the contact may be finternal, and the value of the diameter in that case.

68. Show how to construct a triangle, having given the base, the vertical angle, and the length of the line drawn from the vertex to the base, and bisecting the vertical angle.

69. Find a formula for all the angles which have a given sine.

If $\cos \theta = \frac{1}{2}$, it follows, of course, that $\sin \frac{\theta}{2} = \pm \frac{1}{2}$; show that

the series of values of ϑ derived from the first equation is the same as that derived from the second equation.

70. Find the values of θ which satisfy the equation

$$2\tan\theta + \frac{1}{\tan\theta + 4}\frac{1}{4\tan\theta + \tan\theta + \tan\theta + 4}\frac{1}{4\tan\theta + 4}\frac{1}{4}\frac{1}{4}\frac{1}{2}\frac{$$

71. If two triangles ABC, ABC have a common angle A, and the same described circle within the angle A, show that

$$\frac{r_1}{r} = \frac{\tan\frac{B}{2}\tan\frac{C}{2}}{\tan\frac{B}{2}\tan\frac{C}{2}}$$

where r and r_i are the radii of the circles inscribed in the triangles ABC and ABC.

72. If a and β are the roots of the equation $x^2 - x + \sqrt{3} - 1 = 0$, show that $\tan^{-1}(a^2) \times \tan^{-1}(\beta^2) = n\pi + \frac{3\pi}{4}$.

73. Show how to expand $\sin \theta$ in ascending powers of θ . Show that for angles less than 26' 30", $\sin \theta \div \theta$ differs from unity by less than the one hundred thousandth part of unity.

Establish the formula $\cot a \sin b \cot A \sin 0 + \cos b \cos C$. 74

Find what property of a plane triangle can be deduced from this formula by supposing the radius of the sphere on which the triangle is described to become indefinitely larger than the sides.

75. Show how to determine the relative positions on the surface of a sphere of the four angular points of a regular tetrahedron inscribed in the sphere.

If B, C are two of the angular points, compare the length of the arc of the great circle joining them, with the length of the arc BC of the small circle, in which the plane of one of the faces containing BC cuts the sphere.

76. If A is an angle and a a side of a regular spherical quadri-

lateral show that $\cos A + \tan^2 \frac{\pi}{6} = 0$.

If each side of the quadrilateral is an arc of 60°, show that its area is vory nearly stiths of the surface of the sphere.

Correspondence.

To the Editor of the CANADA SCHOOL JOURNAL.

DEAR SIR,-In reply to the question concerning whispering, asked by "Lennox Tacher" in the December number of the SCHOOL JOURNAL, I w. 11 offer the following :-

First, I think that pupils who sit together and who are at the same work, ought to be allowed to compare notes occasionally. Of course if the two are so unequal in attainments that the one continually interrupts the other's work in order to have this or that done for him, the effect is injurious; but if the whole class are prepared (as they should be) for the work assigned, I see no objection to allowing pupils at the same desk to work together. On the contrary, I think it would be an advantage ; for each would stimulate the other to greater industry and interest in the work, while the contact of one mind with the other would quicken the predecessors, and should have an intelligent knowledge of history.

rerception of both by awakening them to increased activity. Besides, it would be almost too much to expect of a pupil who has just mastered, say a difficult problem in Arithmetic, to refrain from giving vent to his pleasure by communicating the fact to his seat-mate.

In the second place, while I do not object to communications to a limited extent between those at the same desk, I would allow no whispering from one desk to another without permission from the teacher. This rule is necessary to provent disorder.

To check conversation between pupils on subjects aside from their studies it is necessary to supply them with plenty of work, and to get them thoroughly interested in it. It would be wise, also, for the teacher to keep a sharp lookout against general conversation among the less studious pupils, treating every such case as a breach of order.

The teacher who follows this plan must not, of course, look for perfection of order all at once. It takes time to arouse the pupils to such an interest in their work that they will be always busy ; and even then, pupils so busy and so interested will, occasionally, for want of thought, interfere with the schoolroom work by making unnecessary noise. But by patient, persevering effort on th teacher's part, this tendency may be almost entirely overcome, On the whole, the adoption of such a plan will more than repay the teacher in the amount of work done, for whatever sacrifice of perfect quietness it may involve.

I am, yours truly,

BRANT TEACHER.

January 2nd, 1884.

THE RECENT EXAMINATIONS AND THE STUDY OF HISTORY.

To the Editor of the CANADA SCHOOL JOURNAL.

DEAR SIR,-I would like to call attention, through the medium of your Journal, to a feeling of dissatisfaction which exists among the teachers and students of Ontario, with regard to the style of questions set for the history examination.

It has always been the custom of the examiner-and we find the same fault in our authorized text books-to deal too largely in dry facts. Like Mr. Gradgrind they seem to think that education consists in well storing the mind with facts ; in other words, to make it a species of lumber room, which it is the teacher's duty to fill during the year and the pupil's to empty at the annual examinations. The majority of teachers throughout the province clearly understand, that the practice of paying too much attention to individual events, and neglecting to inquire into causes, and the social results that spring therefrom, is totally at variance with all philosophical teaching, yet they are compelled to follow the system in order to pass their pupils through the examinations set for them.

The study of history should be a study of national life, and not a biography of kings, not a record of isolated events ; yet, year after year, we see the students closely questioned on the earlier centuries, while those great social struggles, which took place but a short time ago, and whose effects are yet visible, are comparatively neglected.

An object to be constantly kept in view by the instructor, is the development of the reflective faculties of his pupils; and there is no subject which affords a better training for these mental powers than history, if judiciously handled. It should be remembered that those faces, which appear every day in the school-room. belong to those who may eventually fill our legislative halls ; and they will be men who will need to profit by the experience of their