

episcopal charges and religious newspapers as a gross injustice and an "intolerable strain" upon the benevolence of Church people. Accordingly, the Government has been urged by the advocates of the denominational principle to make two concessions by way of relief: (1) to increase the public grant so as to make all voluntary subscriptions unnecessary, and yet to leave the existing managers free to preserve the distinctive denominational character of their schools, and (2) to repeal that clause (the fourteenth) in the Education Act of 1870 which forbids the teaching of creeds and formularies in the Board Schools, and so to permit the ministers of religion to give separate instruction in those schools to the children of their respective flocks. Both of these proposals were accepted by the Government and embodied in the abortive proposal of 1896. The second, however, does not appear in the new Bill. The Cowper Temple clause is not repealed, but will still remain applicable, not only to all existing Board Schools, but presumably to all new elementary schools to be provided by the proposed education authority. But to the former of the two demands, the Bill makes a liberal response. Denominational schools are to be financed and supported in future at the expense of the rates, on the easy condition that the managers provide and maintain in repair the school building—not, it should be observed, the furniture and equipment—and shall continue to maintain it as a Church school, subject only to the proviso that a number of members of their body, not exceeding one-third, shall be nominated by the local authority.

It will be seen from a careful study of the Bill that its dominant purpose, so far as regards elementary education, is to encourage the multiplication of denominational schools, to remove the "intolerable strain" of maintaining them from the shoulders of the churches to those of the ratepayers, to strengthen the denominational system and to give it a renewed chance of permanence. It may be that this great change in the national policy will commend itself to the approval of the English Parliament and people, but its meaning should not be misunderstood. It was the prayer of the Greek soldier, "Let me die in the light," and if, after all our experience and the efforts of statesmen to make our system of public instruction more national and less sectarian, we are really destined to see that system impaired if not destroyed, we ought at least to have our eyes open, and to see clearly what is the nature of the present reactionary movement and whither it tends.

J. G. FITCH.

III.

The two main causes for the relative poorness of British technical education as compared with that given in Germany and the United States are, (a) the fact that comparatively few British manufacturers have as yet learned the need for the efficient technical training of those whom they employ, and (b) the chaotic condition of the secondary, and part of the elementary, education of this country.

The Government Bill is a step towards the rectification of the latter defect, for not only does it make possible some organisation and improvement of secondary education, but it also tends to secure greater efficiency for the denominational elementary schools, many of which are at present in a starved condition.

Most of those connected with technical education will be glad to see that the Government has chosen as its educational authority a body on which, while the representative element will rightly predominate, there will be a minority of educational experts. Evening classes will come under the control of this new authority, and it will be possible to grade them properly and to secure that the bulk of the money spent upon them is not frittered away in simply giving many thousands a mere smattering of

knowledge. At present this is the case to a considerable extent, and one reason for it is the lack of proper coordination between evening classes in Board Schools and higher institutions; such coordination would encourage a much greater number of the Board-School pupils to continue their studies to a stage when these studies might prove of real benefit, not only to the pupils, but also to the nation.

The Bill has two serious defects, both of which, however, can be easily remedied. In the first place there is the optional clause, which leaves it to the various county and borough councils to decide whether or not they will make themselves responsible for the whole of the education in their districts. If this stands it is certain to perpetuate old difficulties and to give rise to a whole series of new ones; it is to be hoped, therefore, that the Government will stiffen its back and leave no option in regard to this important matter.

Secondly, there is no clause in the Bill which appears to safeguard the interests of technical education by ensuring that the residue under the Local Taxation (Customs and Excise) Act, 1890, shall continue, as heretofore, to be devoted to the purposes of technical education. It is of great importance that this should be specifically enacted, as otherwise there will be a danger that, in view of the increased demands upon the ratepayers for improved elementary and secondary education, the local authorities may curtail the sums they now expend on technical education, though those sums are still inadequate when compared with the sums spent by our leading industrial competitors.

Finally, it would be well to include in the Bill some provision, not only for the coordination of work within the district of each local authority, but also for the coordination by means of the central educational authority of the work undertaken by the local authorities themselves. This is particularly necessary in the matter of technical education, for, if we are to have technical colleges which will be comparable in efficiency with those of the United States of America, we must gather large numbers of students into a relatively limited number of centres, and provide in each centre the best possible equipment and a teaching staff on a scale much more generous than in any example at present to be found in Great Britain. Elementary technical education ought, of course, to be given as far as possible in all parts of the country, but the attempt of small towns to give the highest technical education to few students should be discouraged. These students should be drafted into centres, and the determination as to where these centres should be placed should be left in the hands of the central educational authority. Moreover, higher technical education being a matter of more than local importance should be subsidised, not only, or mainly, by local authorities, but very largely by the State itself. One may hope for such increased State aid at present, but it seems scarcely justifiable to expect it; our statesmen have yet to learn that expenditure on an army and a navy to keep the "open door" for our commerce will not suffice to enable us to meet foreign competition, unless we expend time and money on the training of our industrial and commercial leaders in the same liberal and enlightened manner as is the case in the foremost foreign countries.

J. WERTHEIMER.

THE REGINA MARGHERITA OBSERVATORY.

THE investigation of the physiological phenomena which present themselves when man ascends to high altitudes is as fascinating as the results are, or promise to be, important. The fascination and the importance are connected with the complexity of the problems which have to be dealt with. The effect on respiration due to the diminished oxygen of the rarefied

air, so far from being the one thing to be studied, as the casual observer might suppose, is perhaps not even the chief thing. Of still greater importance, probably, are the manifold effects of diminished pressure on all the tissues and organs of the body, on the vascular system in all its parts, peripheral and central, and the far-reaching secondary results of the changes in the circulation thus brought about. These are further complicated by the influence of variations in temperature and in the qualities of the sun's rays.

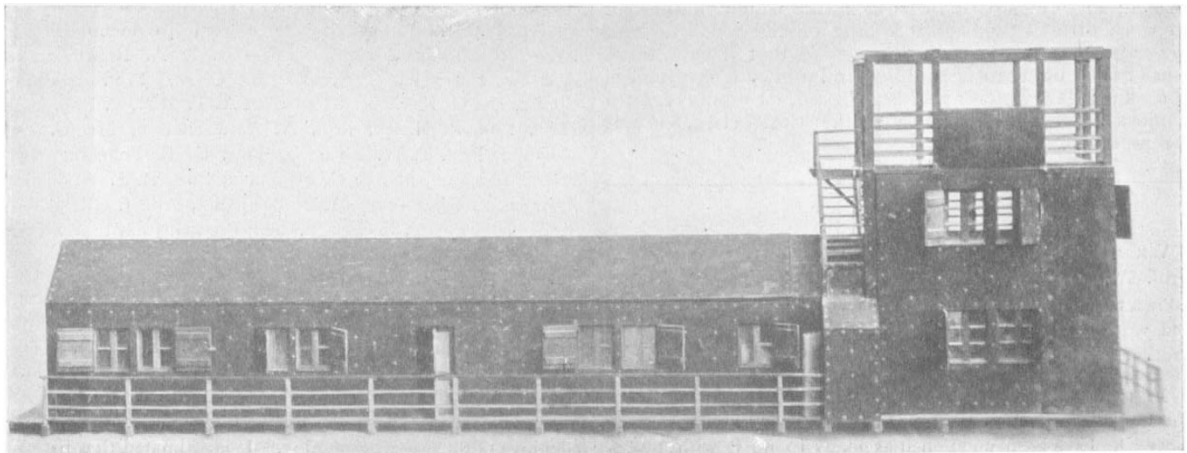
It is through their complexity that the problems in question hold out so much promise; for they carry us beyond the mere question why such or such physiological incidents occur during a high mountain ascent, they lead us more or less directly to fundamental matters of physiology.

To solve these problems two things are needed—the possession of exact instruments of precision, and the opportunity of making use of these instruments at ease and with freedom from disturbance. The observations necessary to solve the problems which we have now before us cannot be satisfactorily conducted by means of rough instruments carried in the pocket, and cannot be adequately made in the open while the observer, blown about by a cutting wind, is steadying himself on his

acknowledged at the International Congress of Physiology held at Turin in September last under the presidency of Prof. Mosso. On the motion of Prof. Bowditch, of Harvard University, it was unanimously resolved to recommend the physiological laboratory forming part of Regina Margherita Observatory to the International Association of Academies as worthy of international support.

Nor was this the only token of approval shown at the Congress. One of the features of the Congress was an exhibition of physiological apparatus gathered from various countries; many of the pieces so shown, including several valuable exhibits from this country, were presented by the makers or private individuals exhibiting them to the Observatory. These, under the care of Prof. Mosso, now belong to the physiological laboratory of the Regina Margherita Observatory.

Hence any physiologist who desires in the ensuing summer vacation to enjoy the united pleasures of high Alpine life and physiological investigation, and we trust that there are not a few such, can do so with ease or even in luxury, finding in the Observatory, not only quiet and shelter, but also almost every apparatus and appliance which he is likely to need. I think I may venture to say that my friend Prof. Mosso deserves the warm



The Regina Margherita Observatory. The first room to the left of the two-storied part of the Observatory is the physiological laboratory.

ice-axe. Happily, both these needs can now be supplied to any competent observer whose inquiry justifies the concession of them.

It was a happy thought of the Dowager Queen Margherita of Italy, whose love for the Alps is known to all the world, to convert into a scientific observatory the Regina Margherita Hut, which stood on the Gnifetti Peak of Monte Rosa at an altitude of 4560 feet, and which had proved of such service to mountain climbers. At her spontaneous suggestion, and by her beneficence, assisted by the Italian Government and with other help, the Hut, largely through the zeal and activity of Prof. Angelo Mosso, of Turin, has been transformed into the Regina Margherita Observatory, fitted up for scientific observations of various kinds.

Prof. Mosso is a physiologist, especially interested in the physiological problems of high altitudes, as shown by his book "Life of Man on the High Alps," and it is through his care that in the Regina Margherita Observatory, in addition to the provision for meteorological, astronomical and other physical observations, physiology has not been neglected. One of the rooms has been set apart for physiological observations and experiments. The great benefit thus rendered to physiology was

thanks, not only of all physiologists, but of all men of science, for what he has thus done. M. FOSTER.

PROF. EXNER ON SCIENCE AND THE STATE.

THE Vienna correspondent of the *Times*, writing on the 7th inst., comments upon a recent address of Prof. Exner which deals with the coming rule of technically trained men, that is, of men who can apply the principles of natural science; engineers trained in collegès as well as in works. The encouragement to scientific education given by foreign statesmen excites in this country only a feeble attention not unmixed with contempt. With us, higher education is still what it was in the time of Queen Elizabeth, and its advocates affirm that the education of men like Burleigh and Bacon, of Coke and Raleigh is good enough for statesmen of the twentieth century. This explains our difficulty in understanding Prof. Exner. Much of the pure science of the world is due to such British genius as could escape the academic net, and yet the power to apply that science is carefully kept away from the British people. We have started all the