still the feeling toward the colored man up to within the past two or three years has been the passive sentiment of "live and let live." The civil equality of the negro was forced upon the white man against his will; but to his credit be it said that in order to show his acquiescence in the theory of government for *all* the people, he has come forward and asked the colored people, as being a large component of the society of which he is himself a part, to assist him in showing to the world what the South has grown to be. The management of the Exposition have created a department devoted exclusively to an exhibition of the advancement made by the colored people within the past twenty years, and have put at the head of it a colored man who commands the confidence of the entire country. A large space has been reserved for the colored people's exhibition in the Government Building. In consequence of this, the negroes in every Southern State are alive with eager activity; and although their exhibition will probably be crude, it will be one of the most significant features of the occasion.

These are the two distinctive benefits to the South that will flow from the Exposition. There are others common to all expositions not necessary to be enumerated here; but one or two of national importance cannot be passed over. New Orleans was selected as the site for the Exposition not only because this is the natural outlet for a large proportion of Southern trade, but because the city is the natural gateway for the vast commerce that must at some time spring up between the United States and the Central and South American countries. To foster and develop that trade, the management of the Exposition have bent every energy. Although aware that New Orleans and the South would be the principal gainers, they saw that the entire country would be enriched, particularly the manufacturing and agricultural industries of the North and West. Nothing was left undone to secure the coöperation of these southern races. Commissioners were sent to interest the governments and the peoples; desirable locations were reserved in the buildings and grounds; premiums were offered to suit the demands of the exhibitors. As a result, the most intense enthusiasm has arisen among countries that had never before evinced the least inclination to participate in foreign exhibitions. Each has vied with the other in attempts to place herself in the most favorable attitude before the world; and each will keenly watch what the various commercial, industrial, and agricultural centers of the world can offer in the way of interchange. European countries have finally appreciated this fact. At first there was a positive refusal on their part to participate in the Exposition. New Orleans was a great way off, and they had been surfeited with expositions. But when they saw the unprecedented zeal of the South American countries, the feeling changed. The newspapers began to call upon the merchants and manufacturers to exert themselves, unless they wished to see their trade directed away from its former channels. And now from across the Atlantic comes information that self-interest has done what self-pride could not do, and that the European will compete with the North American in a struggle for commercial supremacy in the far South.

The Woman's Department of the Exposition is also to be national in its scope, and will yield an abundance of good fruit to the entire country. The women of the South particularly will reap a harvest from the experience of their more fortunate sisters of the North.

To say that the Exposition will have a softening effect upon the lingering animosities of the war is to imply that such animosities still exist — an implication that the Southerner is loath to admit. There is nothing so potent as prosperity to wipe out resentment. The more prosperous the South has grown, the less disposition has she felt to dwell upon what she was wont to consider her injuries; and to-day, standing on the eve of her great festival, to which she has invited the nations of the earth, she would resent the imputation that she harbors malice against any. Doubtless, however, the Exposition will bring about a still better knowledge and higher respect among the various sections of our common country.

NEW ORLEANS. *Richard Nixon.*

Recent Electrical Progress.

THE Electrical Exhibition held at Philadelphia in September and October was to many people a disappointment. Many of the international exhibitions held in the last ten years have been marked by the appearance of important inventions, as the telephone at the Centennial and the phonograph at the great exhibition at Paris. This has led to a general expectation that all important exhibitions will be signalized by the first display of some startling and wonderful discovery or invention. This is particularly true in electricity, the public mind being quite prepared to accept anything, however strange, in this field of research. It must be observed as a curious change in public opinion that while twenty years ago all inventions were received with distrust and unbelief, there is now an eagerness to welcome everything that would be to the elder inventors, like Morse or Howe, something quite bewildering. All this seemed to give to the visitors to the Philadelphia exhibition a certain sense of disappointment, while to the student this feeling was the most striking feature of the occasion.

At the same time, the exhibition was in the best sense a success and very far from disappointing, because it showed a remarkable commercial and industrial progress of the electric light. With the general introduction of dynamos for lighting appeared new mechanical problems. There must be high speed, steadiness of motion combined with ease of management. The dynamos for isolated lighting, as in a hotel, factory, or single building of any kind or on ship-board, must also be compact in design and light in weight. The steam-engines shown at the exhibition were, for this reason, quite as interesting as the lamps. No specially novel motor was exhibited, yet the effect of the demand for high speed was evident in all the types of engines in the exhibition. Even in the matter of belts for connecting engines with dynamos progress was claimed, some belting being shown specially designed to secure steadiness of motion. In brief, the improvement in engines and connections is clearly the result of the peculiar demands of the dynamo, and a new class of motors has appeared, giving high speed and uniform motion, with the utmost compactness of design. One gas-engine directly connected with a dynamo was shown as an interesting illustration of the conver-

sion of heat with little light into motion, and reconversion of motion into light with little heat. Many experiments were made to show the transmission of power by electricity, including the driving of machine tools, printing-press, sewing machines, and a short line of railroad.

The necessity of getting rid of poles and wires in city streets has led inventive talent into this field of work, and a number of new underground systems were represented by models. Among these was at least one that is in actual operation, carrying both telegraph and telephone wires for some distance through the streets of Philadelphia. This system employs a wrought-iron tube carrying a cable formed of insulated copper wires braided together and laid loosely in the pipe, the pipe being kept full of oil slowly moving through the pipe under pressure. A more recent system consists of a brick conduit to be laid in the street, with man-holes at intervals. Within the brick tube are arranged on each side brackets carrying troughs in which the cables or bundles of insulated wires are laid. A track is laid in the center of the conduit between the brackets, and on this track runs a car, having a standard supporting arms that extend over the brackets on each side. This car is drawn through the conduit from one man-hole to another and serves to deposit the wires in the troughs. It is intended that the various wires, or cables, shall lie in the troughs, and to assist the insulation it is designed to have the conduit air-tight, and to fill it at all times with dry air under pressure. To accomplish this, an air-compressor is to be placed at some point of the line, and a tank containing some hygroscopic chemical to dry the air will be placed in connection with the conduit and kept full of compressed air. Safety-valves will also be placed at intervals to relieve the conduit from undue pressure. The aim of this invention is to keep the conduit free from moisture by an excess of dry air, every leak being rendered harmless by an outflow of air that would prevent the entrance of moist air. The system has not yet been tried on a commercial scale. Another more simple system employs a square tube of wood designed to be buried underground. Within the tube are cross-pieces for the support of insulated telegraph and telephone wires. When all the wires are in position an insulating material is poured into the tube, completely covering all the wires from one to six inches, and soon hardening into a kind of artificial stone. The material seemed to be hard and durable, though no tests were offered of its insulating value. Telegraph cables for streets were also shown, one system, at least, being already in use. Sections of the system used with incandescent lights in this city were also shown, consisting of copper rods bedded in insulating material in iron pipes. Other street systems were also shown in models, but seemed to offer no special features of novelty, except in one instance where a sheet of glass perforated with holes is used as a support for the wires in the conduit.

In the application of electricity to railroad work there seems to be some progress in increased efficiency in signaling. Perhaps the most novel is the use of a small dynamo on the engine, constantly kept in motion while the locomotive is running. The engine is insulated from the tender, and the wires from the dynamo are connected one with the engine and the other with the tender, so that the current flows down the wheels of the locomotive, along the rails to the wheels of the tender, and through these wheels to the other wire. If now the joint between any pair of rails and the next pair is separated by some insulating material, the circuit will be broken for the instant when the wheels of the engine are on one pair of rails and the wheels of the tender on the other. This breakage of the circuit through wheels and rails may be used to ring a bell or sound the whistle. It is easy to see that a wire connected with the rail on one side of the insulated joint might be carried any distance and connected with a switch or the lock of a draw-bridge, and then carried back to the rail on the other side of the joint. In the normal position of the switch or the bridge this wire would be a closed circuit bridging the broken joint, and the engine passing the joint would not be affected. If now the switch or draw be opened, the circuit will be broken, and the current as the engine passed the joint would be interrupted and the signal made to sound. In this manner the movement of any switch, bridge, etc., could be made to signal automatically to an approaching engine while still at a considerable distance. By a reversal of the plan, the engine could be used to transmit in advance a warning of its approach. This is, however, already accomplished by other methods. The novelty appears to be in the automatic signaling to the engine by the movement of a distant switch or draw, or from any cause whatever, a washout, breakage of culvert, fire on bridge, or other accident.

The most important application of electricity to railroad work was a combined pneumatic and electric switch and signaling system. The design of this system is to control all the switches and signals at a junction by means of compressed air. The system consists essentially of a compressor and air-reservoir to supply air under considerable pressure to the pipes that extend from the signal-station to each switch and signal-post. At each switch and signal-post is placed a cylinder having a piston and piston-rod, and so arranged that the movement of the piston will control the switch or the signal. In the signal-station is an annunciator connected with distant points on each line of rails. On the approach of a train a bell is rung and the position of the train is shown by the annunciator. All the signals of the system are in their normal condition of danger, and to prepare the lines for the passage of the train hand-levers are turned and air under pressure is admitted to the cylinders controlling the proper switches and signals. This, at the same time, locks all other signals and displays on a board in the hut the exact position of every switch in the system. A full-size model of the switch and signals was shown in operation, and seemed on examination to work with certainty and precision.

Charles Barnard.

The Present State of the Copyright Movement.

THE American Copyright League was formed in May, 1883, with the object of obtaining a reform in our copyright law which should secure to foreign authors the right of property in their works in this country.

Early in the last session of Congress, Representa-